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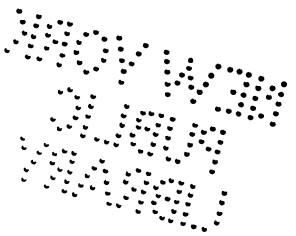




# INTRODUCTION TO THE SCIENCE OF LANGUAGE.







# *INTRODUCTION TO THE*

# *SCIENCE OF LANGUAGE.*

BY

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HON. LL.D. DUBLIN.

IN TWO VOLUMES.

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"Illa demum foret nobilissima grammaticæ species, si quis in linguis tam eruditis quam vulgaribus eximie doctus, de variis linguarum proprietatibus tractaret; in quibus quæque excellat, in quibus deficiat ostendens."—BACON ("De Aug. Scient.," vi. 1).

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# TABLE OF CONTENTS.

## VOL. I.


| | | PAGE |
|---|---|---|
| PREFACE . | . . . . . | v |
| Chapter I. | Theories of Language . . . . . | 1 |
| „ II. | The Nature and Science of Language . . | 90 |
| „ III. | The three Causes of Change in Language (Imitation, Emphasis, and Laziness) . . . | 163 |
| | Dialectic Variety . . . . . | 202 |
| Appendix to Chapter III. | Specimens of Mixed Jargons . | 219 |
| Chapter IV. | The Physiology and Semasiology of Speech (Phonology and Sematology) . . . | 226 |
| | Etymology . . . . . | 345 |
| Appendix I. to Chapter IV. | The Vocal Organs of Animals . | 350 |
| „ II. | „ The Alphabets of Prince L-L. Bonaparte (Mr. A. J. Ellis) and Mr. H. Sweet | 353 |
| Chapter V. | The Morphology of Speech . . . . | 364 |
| | The Metaphysics of Language . . . . | 404 |
| | Comparative Syntax . . . . . | 421 |



# PREFACE TO THE SECOND EDITION.

SINCE the publication of the first edition of this work Comparative Philology, and therewith the Science of Language, has made rapid progress in more than one direction. Old conclusions have been rectified, new facts have been acquired, and the particular views and principles for which I have contended for the last ten years have been gaining general acceptance among continental scholars. In fact, in many parts of these volumes the text and the foot-notes ought now to change places; what three or four years ago could not be put in the foreground in a work intended to be an introduction to current opinions has now ceased to be heterodox, while doctrines which have received the sanction of names like Bopp, Curtius, and Whitney, are still clung to only by an obsolescent school.

The old "Agglutination-theory" of Bopp must be considered as dead. In the newest linguistic work that has emanated from Germany ("Origines Ariacæ," by Karl Penka), the author asserts (p. 201) that it is "only the further we are removed from the period preceding the separation of the Aryan languages, that agglutinative formations gain the upper hand in most of the Aryan

dialects, while flectional formations are lost and replaced." Fick, the author of the Comparative Dictionary of the Indo-European Languages and the most eminent of living authorities on the subject of roots, in a review of the first edition of this work in the Göttingen "Gelehrte Anzeigen" (April 6, 1881), has declared his full adhesion to the theory which sees in the sentence and not in the individual word the unit of primitive speech, and has further supported it by endeavouring to show that the so-called persons of the verb are merely old infinitives eked out by infixes. In a later article in the same periodical (Nov. 9, 1881) he accuses the "Younger Grammatical School" of "still unconsciously remaining at the same obsolete point of view, as regards its conception of language, as Pânini," with all his "empty clatter of roots and suffixes." Johannes Schmidt has resigned the attempt to discover agglutinative elements in Indo-European flection, and wisely maintains that we cannot reach beyond the hypothetical "parent-speech" which was already a highly inflectional language. Delbrück, the latest historian of Comparative Philology in Germany, whose Sanskritic training has naturally inclined him towards the old Indian doctrines of roots and agglutinative suffixes, has nothing stronger to urge in their defence than that they best explain the resemblance between the personal pronouns and the personal terminations of the verb. His summing up reads like the last page of a history that has been played out. "Has the agglutination theory," he asks, "been verified in individual cases? I can scarcely believe that the patient reader, who has followed me through the whole of the above demon-

stration, will reply with a confident 'yes.'"[1] Like myself, all that he can bring against Ludwig's theory of adaptation is the assumption that "every theory of the origin of inflection must be based upon the similarity between certain personal suffixes and certain pronouns, which is so great as to exclude the possibility of an accidental cause."[2]

But the assumption, like so many others that have helped to bolster up the theory that agglutination precedes inflection, is, as I now believe, wholly unfounded. I have given elsewhere[3] the results of my investigations into the personal terminations of the Aryan verb; here I can only say that they are all either old dativa infinitives, as Fick has pointed out, or else infinitival nouns furnished with the ordinary nominal suffixes. Thus the first person singular in *-m* has the ending of the accusative (or neuter nominative), which in certain forms has borrowed a final vowel from the suffix of the third person. This latter represents "the stem" (or possibly the locative) of abstract nouns like γένεσι-ς and μῶτι-ς, to which the third person plural, originally λέγοντε, has been assimilated. The third person, in fact, as in Turkish and so many other languages, was primarily a noun, an abstract substantive in the singular, a participle present in the plural. The terminations of the first person plural, *-μες*, *-μεν*, and *-με* (Skt. *-ma*), like those of the Sanskrit first person dual (*-vas*, *-va*), claim affinity with the infinitival *-μεν* and *-Fεν*

[1] "Introduction to the Study of Language" Eng. tr. (1882); p. 101.

[2] P. 71.

[3] "Die Internationale Zeitschrift für allgemeine Sprachwissenschaft": I. 1. (1883).

(in φερε-Fεν = φέρειν), the final sibilant of -μες, like that of the second person singular, being identical with that which plays so large a part in the declension of the noun and is also the symbol of a neuter "stem." The case-ending -θα can be attached to -μες just as the case-ending -σι is to πόδ-εσ-σι, and -θεν which took the place of -θα in Æolic is well known to every student of the Homeric declension. A suffix -*a* is used in the stead of -*m* to denote the first person of the singular, not only in the perfect tense, but also in most of the presents of Greek and Latin (λέγω, for example, being λεγο-α), and this suffix has no more resemblance to a personal pronoun than the suffixes of the third person of the verb. In short, the Aryan verb was originally a noun, just as it still is in many languages of the world, and how long it was in becoming a separate part of speech may be seen from the wide-spread influence of analogy or assimilation upon the verbal conjugation. So far from supporting the agglutinative theory, the Aryan verb, when closely questioned, most emphatically condemns it. Ludwig's theory of adaptation can alone explain how its forms which on the phonetic side were the same as those of the noun came syntactically to have a new signification of their own. What, therefore, I have said about the Aryan verb in the second volume of this work (pp. 151, *sq.*) needs to be re-written. It represents only the current theory of the last half-century, and must now make way for one more in accordance with the actual facts.

Fick's discovery that the shortened form of the stem in the so-called second aorist is later than that of the present, which I had to relegate to a foot-note, should be

moved into the text. The endeavour of Curtius to defend the old theory has proved a failure, and recent researches into the primitive Aryan accentuation and vocalic system have gone to show that Fick is right. The so-called second or strong aorist—which ought rather to be termed the weak aorist—is really the imperfect of the contracted present-stem, and hence it is that a form like the Greek ἔλιπον may be regarded as indifferently an aorist and an imperfect. The original Indo-European verb possessed three, and probably four, forms of the present, one with a long accented first syllable like πείθω, a second with a shortened unaccented first syllable like *πῐθω, and a third with the first syllable reduplicated as in δίδωμι. By the side of the last probably stood another reduplicated present with the stem-syllable short, as *πεπῐθω. All these forms correspond to similar nominal forms, and the shortening of the first syllable in them was due to a change of accentuation. The pluperfect is the imperfect of the reduplicated present, just as the second aorist is the imperfect of the contracted present.

Thanks to the labours of Brugman, Osthoff, de Saussure and others, the true character of primitive Aryan vocalization has at last become clear. The Sanskrit *a* has been shown to be due to the coalescence of three original short vowels, $a_1$, $a_2$, and $a_3$, which have been more or less preserved in the Armenian and European languages, and which Collitz has made extremely probable were pronounced as in Greek and Latin, *ă*, *ĕ* and *ŏ*. Johannes Schmidt, however, has pointed out that Brugman was in error in believing *ŏ* to be represented by a Sanskrit *a*. In Teutonic, Letto-Slavic, and apparently Keltic, *ă* and *ŏ*

have been confounded together; it is only in Greek, Latin and Armenian, that the complete gamut has been preserved. But, as de Saussure was the first to notice, there was more than one *ĕ* and more than one *ŏ* in the parent-speech. There was on the one hand an *ĕ* and an *ŏ* which interchanged with one another, as in λέγ-ε-τε and λέγ-ο-μεν, the *ĕ*, as Fick has discovered, marking an originally accented syllable and the *ŏ* an unaccented one; while on the other hand we find traces of another and independent *ŏ* as in πόσις, *potis*, as well as of another and independent *ĕ*. Side by side with these short vowels stood the sonant liquids and nasals, sounds corresponding to those heard in the English *able*, *other*, *maiden* and *besom*. The sonant *r̥* was preserved in the Sanskrit *ṛi* (which should be written *r̥*); in Greek *r̥* and *l̥* became αρ, and ρα, αλ and λα; in Latin *or*, *ul* or *ĭl*; in Gothic *aur* and *ul*. The sonant nasals *m̥* and *n̥* similarly appear as *a* in Greek, *em* and *en* in Latin, *im* and *in* in Lithuanian, *e* in Old Slavonic, and *um* and *un* in Gothic (or English). Thus the medial syllable of ἔδρακον represents the sonant liquid to which the "root" δερκ was reduced in the unaccented present-stem, and the final syllable of πόδα, the Latin *pedem*, has developed out of the sonant labial.

Not only has the existence of additional vowels been thus vindicated for the parent-speech, the existence of additional consonants has been vindicated for it also. Thus Johannes Schmidt has proved that the Greek θ, Skt. *h*, represents two distinct sounds which appear in Zend as *j-* (*zh*) and *z* (Old Persian *d*), and in Old Slavonic as *ž* and *z*.[1] Osthoff, too, has recognized that a *s* once

[1] Schmidt assumes the existence of four different sets of gutturals

existed by the side of *s*, which has become *s* in Greek, as in *μισθός*, Gothic *mizdô*.

Two conclusions may be drawn from these discoveries. First of all, as I urged more than ten years ago, the hypothetical "alphabet of the parent-speech" is really the creation of antiquarian philology, the result of analysis and the resolution of sounds one into another. The primitive Aryan language must have been richer in sounds than its daughters, and not poorer; time and increased civilization tend to soften and fuse sounds together, not to develope new ones. The simplicity of the hypothetical alphabet and its want of all difficult sounds were its own condemnation. Then, secondly, we may infer that the early condition of Indo-European speech is less faithfully reflected in Sanskrit than in its European sisters. It is to Greek, and not to Sanskrit, that we must henceforth look for light on the history of Aryan grammar and etymology. The discovery that the European vocalic system is older than the Indic, has not only revolutionized the study of etymology, but has made Greek and Latin the standards of etymological investigation. Sanskrit has played its part in the history of Comparative Philology, and a very important part it has been, though not unaccompanied by errors and false assumptions which we are now beginning to correct.

in the primitive Aryan, one of which has left no traces behind it in the derived dialects. His table is as follows :—

| Parent-speech :— | Sanskrit :— | Zend :— | Old Slavonic :— |
|---|---|---|---|
| I. (*a*) k, g, gh | k, g, gh | k (kh), g (gh) | k, g |
| (*b*) k', g', gh' | ch, j, h | ch (sh), j (zh) | č, ž |
| II. (*a*) ĸ, γ, γ*h* | . . . . | . . . . | |
| (*b*) ĸ' γ', γ*h*' | 's, j, h | 's (ç), z | s, z |

Doubtless there still are other errors and false assumptions which will have to be corrected hereafter when the Keltic languages also have been made to tell all their tale.

The dethronement of Sanskrit has a direct bearing on the question of the original home of the Indo-Europeans, or rather of those who originally spoke the Indo-European dialects. I must avow my entire conversion to the theory first propounded by Latham, and of late years ably defended on anthropological and linguistic grounds by Poesche and Penka, that the Aryan race had its first seat, not in Asia, but in the Baltic provinces and northern Germany. Here the Aryan languages grew up and from hence they spread along with the spread of the tall, blue-eyed, light-haired dolichocephalic people who spoke them. That people may perhaps, as Poesche has argued, have been permanently Albinoised by long residence among the marshes of the Rokitno; at any rate it eventually succeeded in impressing its supremacy and its speech upon races in no way allied to it, or only allied to it through intermarriage. The cuneiform inscriptions have made it certain that the old hypothesis which brought the Aryans into Europe along the peninsula of Asia Minor must be given up; among the hundreds of names quoted on the monuments no Aryan ones occur in the whole of the broad region between Kurdistan and the Halys, and my decipherment of the Vannic texts has proved that the Aryans did not enter Armenia until after B.C. 640. They were probably, as Herodotus (vii. 73) and Eustathios (on Dion. v. 694) affirmed, a Phrygian colony.

The dethronement of Sanskrit has yet another impor-

tant bearing on linguistic science. The "empty clatter of roots and suffixes," as Fick has called it, must pass away with the influence of the Indian grammarians. Convenience will oblige us still to make use of these terms, but not in the sense that philological realism has hitherto attached to them. What we ought to understand by them has been explained by me in an article on *Grammar* in the new edition of the "Encyclopædia Britannica." In the Aryan family of languages the root is usually the first syllable, or the first two syllables, of a group of words which agree in their general meaning, and such roots are necessarily numerous. Suffixes, on the contrary, are with one or two exceptions the comparatively small number of syllables in which words terminate, whatever their roots may be. The agreement between words in respect of their suffixes is one of grammatical relation, not of lexical significance. Suffixes may be either classificatory, that is to say, they may define the class to which a word belongs, or flectional, denoting the relation of a word to the rest of the sentence, or again they may have no function at all. There is absolutely no difference between classificatory and flectional suffixes; the same suffix frequently appears now as the one and now as the other. But it may also appear as neither, preserving its original function of a simple meaningless termination of the sentence-word. The setting apart of certain of these terminations for the expression of grammatical relations constituted the rise and development of grammar. Grammar, however, is no arbitrary thing, no long string of fixed rules. It merely represents the general usage of a certain body of speakers at a certain

time and in a certain place. Custom alone can determine what is right and wrong, not the dictum of grammarians, however eminent. The rules of Anglo-Saxon grammar would be incorrect if applied to modern English, since Anglo-Saxon is no longer spoken in this country, and it would be as wrong to use *thou* for the nominative *thee* in the Somersetshire dialect, as it is to say *thee art* instead of *you are* in the Queen's English.

Professor A. H. Keane had been kind enough to furnish me with a list of corrections and additions for the table in the sixth chapter in which I have endeavoured to classify genealogically the known languages of the world. Unfortunately the list has been burnt, and I can therefore only ask the readers of my book to supplement it by a reference to Mr. Keane's ethnological appendices in Stanford's volumes on "Australasia," "Africa" and "Central and Southern America." I may, however, add here that Professor Rhŷs has returned to the old division of the Keltic family into Kymric (that is, Welsh, Cornish, Breton and Gaulish) and Gaelic, while Dr. Hübschmann has made it clear that Armenian must no longer be grouped with the Iranian dialects, but occupies, like Phrygian, a place midway between Greek (not Iranian) and Letto-Slavic.

The selected list of works for the philological student will have to be enlarged, more especially in the department of phonetics. The bibliography of folklore which is now being published in "The Folklore Journal," dispenses me from the necessity of mentioning books like Miss Frere's "Old Deccan Days," or Sir George Cox's "Tales of the Gods and Heroes" which were accidentally

omitted from my list. The death of Ahrens has unfortunately deprived us of the hope of seeing a new edition of his work on the Greek dialects, but its place is in great measure supplied by Gustav Meyer's "Griechische Grammatik" (Leipzig, 1880), which, in spite of a few shortcomings that have been exposed by Johannes Schmidt, is indispensable to the student of scientific Greek grammar. Ahrens' own work, "Griechische Formenlehre des homerischen und attischen Dialekts" (Göttingen, 1852) has lost none of its original value. Delbrück's researches into comparative syntax have reached a fifth volume which deals wholly with Greek, and in his "Einleitung in das Sprachstudium" (Leipzig, 1880, translated into English under the title "Introduction to the Science of Language," 1882), he has given a compendious but lucid history of comparative philology in Germany up to the present time. For the relations of philology to anthropology and the possibility of painting a picture of primitive Aryan culture by the help of Comparative Philology the reader should consult the newly-published works of Karl Penka on "Origines Ariacæ" (Vienna, 1883) and of O. Schrader on "Sprachvergleichung und Urgeschichte" (Jena, 1883). I must not conclude without offering a welcome to the new "Internationale Zeitschrift für allgemeine Sprachwissenschaft," which owes its existence to the energy of Dr. Techmer, whose "Phonetik," published at Leipzig in 1880, will long remain the standard work on the subject of phonetics.

A. H. SAYCE.



# PREFACE.

BUT few words of Preface are needed for a work which will sufficiently explain itself. It is an attempt to give a systematic account of the Science of Language, its nature, its progress and its aims, which shall be at the same time as thorough and exhaustive as our present knowledge and materials allow. How far the attempt has been successful is for the reader to judge; the author cannot do more than his best. The method and theories which underlie the work have been set forth in my "Principles of Comparative Philology," where I have criticized certain of the current assumptions of scientific philology, and endeavoured to show their inadequacy or positive error. It is gratifying to find that my views and conclusions have been accepted by leading authorities on the subject, and I shall, therefore, make no apology for tacitly assuming them in the present work. So far as the latter is concerned, however, it matters little whether they are right or wrong; an Introduction necessarily has mainly to deal with the statement and arrangement of ascertained facts. The theories the facts are called upon to support are of secondary importance.

It may be objected that I have handled some parts of the subject at disproportionate length. But it has

seemed to me that an Introduction should give a survey of the whole field to be explored, and not neglect any portion of it for the sake of literary unity or easy reading. There is certain work which must be done once for all, if the ground is to be cleared for future research and progress, and if well done need not be done again. The historical retrospect in the first chapter is indispensable for a right understanding of the "Science of Language;" but in writing it I have tried not to forget that brevity is a virtue as well as completeness. It is the fault of the subject-matter if the chapter seems unduly long.

Exception may perhaps be taken to the use I have made of the languages and condition of modern savage tribes to illustrate those of primitive man. It is quite true that in many cases savage tribes are examples of degeneracy from a higher and less savage state; the Arctic Highlanders of Ross and Parry, for instance, have retrograded in social habits, and the disuse of boats and harpoons, from the Eskimaux of the south; and if we pass from savage to more civilized races there is distinct evidence in the language of the Polynesians that they have lapsed from a superior level of civilization. It is also quite true that, however degraded a tribe or race may now be, it is necessarily much in advance of palæolithic man when he first began to create a language for himself, and to discover the use of fire. Nevertheless, it is in modern savages and, to a less degree, in young children, that we have to look for the best representatives we can find of primæval man; and so long as we remember that they are but imperfect representatives we shall not go far wrong in our scientific inferences. As

Professor Max Müller has said:[1] "The idea that, in order to understand what the so-called civilized people may have been before they reached their higher enlightenment, we ought to study savage tribes, such as we find them still at the present day, is perfectly just. It is the lesson which geology has taught us, applied to the stratification of the human race."

In the matter of language, however, we are less likely to make mistakes in arguing from the modern savage to the first men than in other departments of anthropology. Here we can better distinguish between old and new, can trace the gradual growth of ideas and forms, and determine where articulate language passes into those inarticulate efforts to speak out of which it originally arose. In fact, a chief part of the services rendered to glottology by the study and observation of savage and barbarous idioms consists in the verification they afford of the results of our analysis of cultivated and historical languages. If, for example, this leads us to the conclusion that grammatical simplicity is the last point reached in the evolution of language, we must go to savage dialects for confirmation before we can accept the conclusion as proven. Moreover, there is much of the primitive machinery of speech which has been lost in the languages of the civilized nations of the world, but preserved in the more conservative idioms of savage tribes—for savages, it must be remembered, are the most conservative of human beings; while were we to confine our attention to the groups of tongues spoken by civilized races we should

[1] "Lectures on the Origin and Growth of Religion," p. 65.

form but a very partial and erroneous view of language and its structure, since the conceptions upon which the grammars of the several families of speech are based are as various as the families of speech themselves. Nor must we forget the lesson of etymology, that the poverty of ideas with which even our own Aryan (or rather præ-Aryan) ancestors started was as great as that of the lowest savages of to-day.

My best thanks are due to Professor Mahaffy for his kindness in looking over the sheets of the present work during its passage through the press, and to Mr. Henry Sweet for performing the same kind offices towards the fourth chapter. Mr. Sweet's name will guarantee the freedom of the chapter from phonetic heresies. I have also to tender my thanks to Professor Rolleston for the help he has given me in the preparation of the diagrams which accompany the work, while I hardly know how to express my gratitude sufficiently to Mr. W. G. Hird, of Bradford, who has taken upon himself the onerous task of providing an index to the two volumes. How onerous such a labour is can be realized only by those who have already undergone it.

A. H. SAYCE.

QUEEN'S COLLEGE, OXFORD,
*November*, 1879.

# CHAPTER I.

## THEORIES OF LANGUAGE.

"If we preserve in our histories of the world the names of those who are said to have discovered the physical elements—the names of Thales, and Anaximenes, and Empedocles—we ought not to forget the names of the discoverers of the elements of language—the founders of one of the most useful and most successful branches of philosophy—the first grammarians."—MAX MÜLLER.

"SPEECH is silvern, silence is golden," is the well-known saying of a modern prophet, wearied with the idle utterances of a transition age, and forgetful that the *prophet*, or προφήτης, is himself but the "spokesman" of another, and that the era which changed the Hebrew seer into the *Nabi*, or "proclaimer," brought with it also the beginning of culture and civilization, and the consciousness of a high religious destiny. Far truer was the instinct of the old poet of the Rig-Veda, the most ancient monument of our Aryan literature, written, it may be, fifteen centuries before the birth of Christ, when he calls "the Word" one of the highest goddesses "which rushes onward like the wind, which bursts through heaven and earth, and, awe-inspiring to each one that it loves, makes him a Brahman, a poet, and a sage." The haphazard etymology which saw in the μέροπες ἄνθρωποι of Homer "articulate-speaking

men," must indeed be given up, but we may still picture to ourselves the "winged words" which seemed inspired with the life and divinity of Hermês, or the sacred Muses from whom the Greek singer drew all his genius and power. Language is at once the bond and the creation of society, the symbol and token of the boundary between man and brute.

We must be careful to remember that language includes any kind of instrumentality whereby we communicate our thoughts and feelings to others, and therefore that the deaf-mute who can converse only with the fingers or the lips is as truly gifted with the power of speech as the man who can articulate his words. The latter has a more perfect instrument at his command, but that is all. Indeed, it is quite possible to conceive of a community in which all communications were carried on with the hands alone; to this day savage tribes make a large use of gestures, and we are told that the Grebos of Africa ordinarily indicate the persons and tenses of the verb by this means only. Wherever there is the power of making our thoughts intelligible to another, or even simply the possibility of this power, as in the case of the infant, there we have language, although for ordinary purposes the term may be restricted to spoken or articulate speech. It is in this sense that language will be understood in the following pages.

Now one of the earliest subjects of reflection was the language in which that reflection clothed itself. The power of words was clear even to the barbarian, and yet at the same time it was equally clear that he himself exercised a certain power over them. Wonder, it has

been said, is the mother of science, and out of the wonder excited by the great mystery of language came speculations on its nature and its origin. What, it was asked, are those modulations of the voice, those emissions of the breath, which inform others of what is passing in our innermost souls, and without which the most rudimentary form of society would be impossible? Perhaps it was in Babylonia that the first attempt was made to answer the question. Here there was a great mixture of races and languages, and here it was accordingly that the scene of the confusion of tongues was laid. The Tower of Babel, the great temple of the Seven Lights of Borsippa, whose remains we may still see in the ruins of the Birs-i-Nimrûd, was, it was believed, the cause and origin of the diversity of human speech. Men endeavoured to make themselves equal to the gods, and to storm heaven like the giants of Greek mythology, but the winds frustrated their attempts, and heaven itself confounded their speech. Such was the native legend, fragments of which have been brought from the Assyrian library of Assur-bani-pal, or Sardanapalus, and which cannot fail to bring to our minds the familiar history of Genesis.

Now the same library that has given us these fragments has also given us the first beginnings of what we may call comparative philology. The science, the art, and the literature of Babylonia had been the work of an early people who spoke an agglutinative language, and from them it had all been borrowed and perhaps improved upon by the later Semitic settlers in the country. Their language, which for the want of a better name we

will call Accadian, had ceased to be spoken before the seventeenth century B.C., but not before the civilization and culture it enshrined had been adopted by a new race, who had to study and learn the dead tongue in which they were preserved, as the scholars of the Middle Ages had to study and learn Latin. Hence came the need of dictionaries, grammars, and reading-books; and the clay tablets of Nineveh accordingly present us not only with interlinear and parallel Assyrian translations of Accadian texts, arranged upon the Hamiltonian method, but also with syllabaries and lexicons, with phrase-books and grammars of the two languages. It is the first attempt ever made to draw up a grammar, and the comparative form the attempt has assumed shows how impossible was even the suggestion of such a thing without the comparison of more than one form of speech. The vocabularies are compiled sometimes on a classificatory principle, sometimes on an alphabetic one, sometimes on the principle of grouping a number of derivations around their common root; and the latter principle enunciates at once the primary doctrine and object of comparative philology—the analysis of language into its simplest elements. With the discovery of roots we may date the possibility and the beginning of linguistic science.

Next in order of time to the grammarians of Babylonia and Assyria came the grammarians of India, whose labours again were called forth by the comparison of different forms of speech. The sacred language of the Veda had already become antiquated and obscure, while the rise and spread of Buddhism had raised more than

one popular dialect to the rank of a literary language, and obliged the educated Hindu not only to study his own speech in its earlier and later forms, but to compare it with other more or less related idioms as well. Since Indian philology, however, is intimately connected with the history of the modern science of Language, it will be more convenient to consider it further on.

The problems of language were naturally among the first to present themselves to the activity of the Greek mind. Already the instinct of their wonderful speech, itself the fitting creation and reflex of the national character, had found in the word λόγος an expression of the close relationship that exists between reasoned thought and the words in which it clothes itself; and the question which Greek philosophy sought to answer was the nature of this relationship, and of the language wherein it is embodied. Do words exist, it was asked, *by nature* (φύσει) or *by convention* (θέσει); do the sounds which we utter exactly and necessarily represent things as they are in themselves or are they merely the arbitrary marks and symbols conventionally assigned to the objects we observe and the conceptions we form? This was the question that the greatest of the Greek thinkers attempted to solve; and the controversy it called forth divided Greek philosophy into two camps, and lies at the bottom of all its contributions to linguistic science. It is true that the question was really a philosophic one, and that the advocates of free-will on the one side, and of necessity on the other, naturally saw in speech either the creation and plaything of the human will, or else a power over which man has as little control as over the forces of nature. Important as were the results

of this controversy, not only to the philosophy of language, but yet more to the formation of grammar, it was impossible for a *science* of language to arise out of it: its results were logical rather than linguistic, for science requires the patient *à posteriori* method of induction, not the *à priori* method of immature philosophizing, however brilliantly handled. The Greeks had, indeed, grasped a truth which has too often been forgotten in modern times, the truth that language is but the outward embodiment and crystallization of thought; but they overlooked the fact that to discover its nature and its laws we must observe and classify its external phænomena, and not until we have ascertained by this means the conditions under which thought externalizes itself in language, can we get back to that thought itself.

Greek researches into language fall into three chief periods, the period of the præ-Sokratic philosophy, when language in general was the subject of inquiry, the period of the Sophists, when the categories of universal grammar were being distinguished and worked out, and the period of Alexandrine criticism, when the rules of Greek grammar in particular were elaborated. Herakleitus and Demokritus are the representatives of the first period: the one the advocate of the innate and necessary connection between words and the objects they denote, the other of the absolute power possessed by man to invent or change his speech. The dispute, however, was soon shifted from words as they are to words as they once were; since on the one hand it was manifest that the union assumed to exist between words and objects could no longer be pointed out in the majority of instances,

and on the other hand that numerous words are merely the later corruptions of earlier forms, so that the invention of even a single word must be pushed back to an age far beyond the oldest experience. Hence grew up the so-called science of *etymology*, a science whose name, it must be confessed, fully justified one of its leading principles which resulted in the derivation of *lucus a non lucendo*, "because the sun does *not* shine therein." Ἐτυμο-λογία was "the science of the truth," the ascertainment of the true origin of words; but in Greek hands its truer designation would have been the "science of falsehood" and guess-work. Its follies have been enshrined in ponderous works like the "Etymologicum Magnum" or the "Onomastikon" of Pollux; and its curious illustrations of the absurdities into which a clever and active intellect will fall when deprived of the guidance of the scientific method of comparison, are scattered broadcast through the writings of Greek thinkers. Two of its rules, for instance, both founded on the assumption of the "natural" origin of words, lay down that the word undergoes the same modifications as the thing it denotes, and that objects may be named from their contraries (κατ' ἀντίφρασιν); and hence it was easy to derive φιλητής, "a thief," from ὑφέλεσθαι, "to steal," by "depriving" the latter word of its first syllable, and to see in *cœlum*, "heaven," *cœlatum*, "covered," "because it is open," or in *fœdus*, "covenant," *fœdus*, "hateful," "because there is nothing hateful in it."[1] After this we need not smile at Plato's derivation of θεοί, "gods," from θέειν, "to run," because the

[1] See Jolly (translation of Whitney), "Die Sprachwissenschaft," p. 640.

stars were first worshipped, or Aristotle's assumption that objects are easy of digestion when they are "light" in weight. Dr. Jolly has pointed out that the fact that ἐτυμός is Ionic indicates the origin of the pseudo-science in the Ionic schools of philosophy; it is therefore a remarkable illustration of the "self-sufficient" nature of Greek thought and of Greek contempt for the "barbarian," that the dialects of Asia Minor, though so closely akin to Greek, should have been utterly disregarded, and the investigations into language consequently left to the vagaries of the fancy without the light of comparison to guide them to the truth. Plato in the "Kratylus" is almost the only Greek who has noticed the resemblance of one of these "barbarous" dialects to his own, and he has only noticed it to draw a wrong conclusion from the fact. Many Greek words, he maintains, were borrowed from abroad; and by way of examples he quotes κύων (the Sanskrit *'swan*, the Latin *canis*, and our *hound*), ὑδώρ (the Sanskrit *udam*, the Latin *unda*, and our *water*), and πῦρ (the Latin *pruna*, the Umbrian *pir*, and our *fire*), as being identical with the names of the same objects in Phrygian. The very fact, however, that Plato has noticed this resemblance shows that the stimulating influence of contact with Persia was still felt, even in the domain of language, when the Greeks found themselves in the presence of an allied and similar civilization, with all its contrasts to their own, and when men like Themistokles found it politic to acquire a fluent knowledge of the Persian tongue. It was not until the Empire of Alexander had overthrown that of Cyrus and Darius and impressed upon the Greek a sovereign contempt for the Asiatic, and an equal belief

in his own innate superiority, that any regard for the jargons of the "barbarians" became altogether out of the question. It was then that the masterpieces of early Greek literature came to be the sole objects of study and investigation, and philological research took the form of that one-sided, and therefore erroneous, exposition of the grammar of a single language, which has been the bane of classical philology down to our own time.

The linguistic labours of the age of the Sophists were occasioned by the needs of oratory. When rhetoric became a profitable and all-powerful pursuit, and the end of education was held to be the ability to hold one's own, whether right or wrong, and confute one's neighbour, words necessarily came to be regarded as more valuable than things, and the main care and attention of the sophist were bestowed upon the form of his sentences and the style of his argument. Just as language had been approached in the preceding period from a purely metaphysical point of view, and was to be approached in the succeeding period from a logical point of view, so now it was looked at from the side of rhetoric. It was not *etymology*, a knowledge of the "truth," that was wanted, but a knowledge of the composition of sentences and of the way in which they could best be arranged for the purposes of persuasion. The first outlines of European grammar accordingly go back to this Sophistic age. We find Protagoras criticizing the opening verse of the Iliad, because μῆνις, "wrath," is used as a feminine, contrary to the sense of the word, or distinguishing the three genders and busying himself with the discovery of the verbal moods, while the lectures of Prodikus were occupied with

the analysis and definition of synonyms. Some idea may be formed of the grammatical zeal of the Sophists from the "Clouds" of Aristophanes,[1] where he ridicules the pedantry that would force the artificial rules of grammar upon the usage of living speech.

Plato and Aristotle, the products of the impulse given to thought by that greatest of the Sophists, Sokrates, form the connecting link between the Sophistic and the Alexandrine periods, and renew in the shape required by the progress of philosophy the old contest regarding the nature of language between the followers of Herakleitus and those of Demokritus. In philology as elsewhere, the idealism of Plato stands opposed to the practical realism of his pupil Aristotle. Plato paints language as it ought to be; Aristotle reasons upon it as it is. But in both cases it was not language in general, but the Greek language in particular, that was meant; and owing to this short-sightedness of view and disregard of the comparative method, the theories of each, however suggestive and stimulating, are yet devoid of scientific value and mainly interesting to the historian alone. The problem of Plato's "Kratylus" is the natural fittingness of words, which finally resolves itself into the question how it happens that a word is understood by the hearer in the same sense as it is intended by the speaker. No answer is given to the question; but the dialogue gives occasion for a complete review of the linguistic opinions prevalent at the time, and the conclusion put into the mouth of Sokrates is that while in actual (Greek) speech no natural and innate connection can be traced between words and

[1] 660-690.

things, it were much to be wished that an ideal speech could be created in which this natural connection would exist. In this wish, as Dr. Jolly remarks, Plato shows himself the forerunner of Leibnitz and Bishop Wilkins, the one with his "Lingua characteristica universalis," and the other with his "Essay towards a real Character and a Philosophical Language."

Aristotle, as might be expected, will have nothing to do with the theory of the natural origin of speech. He declares himself unequivocally on the side of its opponents, and lays down that language originates through the agreement and convention of men (συνθήκη). Words, he holds, have no meaning in themselves; this is put into them by those who utter them, and they then become so many symbols of the objects signified (ὅταν γίνεται σύμβολον). "For the sentence (λόγος), when heard, makes one's meaning intelligible, not necessarily but accidentally, since it consists of words, and each word is a symbol."[1] At the same time Aristotle makes no clear distinction between thought and language; *concept* and *word* are with him interchangeable terms; and his famous ten categories into which all objects can be classed are as much grammatical as logical, or perhaps more rightly a mixture of both. In his hands the rhetorical gives way to the logical treatment of language, and the sentence is analyzed in the interests of formal logic. As Kant and Hegel observed long ago, the logical system of Aristotle is purely empirical; it is based on the grammar of a single language, and is nothing but an analysis

[1] See the quotations in Steinthal: "Geschichte der Sprachwissenschaft bei den Griechen und Römern" (1863), pp. 181 *sq.*

of the mode in which the framers of that language unconsciously thought. To understand and criticize it properly we must bear this fact in mind, and remember that the system cannot be corrected or replaced until comparative philology has taught us to distinguish between the universal and the particular in the grammar of Greek and Aryan. Whatever injury, however, logic may have suffered from having been thus built up upon the idiosyncrasies of the Greek sentence, Greek grammar gained an equivalent advantage. Besides the ὄνομα or "noun," and the ῥῆμα or "verb," Aristotle now added to it the σύνδεσμος or "particle," and introduced the term πτῶσις or "case," to denote any kind of flection whatsoever. He also divided nouns into simple and compound, invented for the neuter another name (τὸ μεταξύ) than that given by Protagoras, and starting from the termination of the nominative singular endeavoured to ascertain the rules for denoting a difference of gender.

The work begun by Aristotle was continued by the Stoics, who perfected his grammatical system just as they had perfected his logical system. They separated the ἄρθρον or "article" from the particles, and determined a fifth part of speech, the παυδέκτης or "adverb;" they confined the πτῶσις or "case" to the flections of the noun, and distinguished the four principal cases by names, the Latin translations or mistranslations of which are now so familiar to us; they divided the verb into its tenses, moods, and classes, and in the person of Chrysippus, the adherent of the Stoic school (B.C. 280-206), separated nouns into *appellativa* and *propria*. But, like Aristotle, they assumed the same laws for both thought and language, and were

thus led into difficulties and fallacies which the slightest acquaintance with another language might have prevented. Thus the logical copula was confounded with the substantive verb by which it was expressed in Greece, and false arguments were framed and supported on this assumption. Their opponents, the Epicureans, contented themselves with inquiries into the origin of speech, which had to be explained, like everything else, in accordance with the theory of atoms. The large part, however, played by the action of society in their system gave their theorizing upon the subject an accidental aspect of truth which at first sight is somewhat surprising; and even the well-known lines of Horace (Sat. I. 3. 99, *sq.*) contain a more correct representation of the primitive condition of man and the evolution of language than the speculations current upon the matter up to the last few years. Language, it was held, existed φύσει, not θέσει; but the nature which originated speech was not external nature, but the nature of man. The different sounds and utterances whereby the same object is denoted in different languages are due to the varying circumstances in which the speakers find themselves, and are as much determined by their climate and social condition, their constitution and physique, as the lowing of the ox or the bleating of the lamb. Men, indeed, create speech, not however deliberately and with intention (ἐπιστημόνως), but instinctively through the impulse of their nature (φυσικῶς κινούμενοι).[1] We may perhaps trace in these expressions the germs of the theory of the onomatopœic origin of language.

While the Epicureans were speculating on the origin

[1] Proclus, p. 9.

of speech, the grammarians of Alexandria were busying themselves with the elaboration of what the French would call a *grammaire raisonnée*. "Alexandria," says Dr. Jolly, "was the birthplace of classical philology, a study which has directly raised itself upon the ruins of the old Hellenic culture and spiritual originality." The intense mental activity and productiveness of Athens had made way for the frigid pedantry and artificial mannerisms of commentators and court-poets; the free national life and small rival states of Greece had been replaced by a semi-oriental despotism and a cosmopolitan centralization; and unable themselves to emulate the great creations of the classic age, the literary coterie of the Alexandrine Museum could do no more than admire and edit them. The very dialect in which the Attic tragedians and historians had composed and written had become strange and foreign, while the language of the Homeric Poems, which it must be remembered were to the Greeks what the Bible is to us, seemed as obscure and obsolete to the Alexandrine, as the tongue of Layamon or Piers Plowman does to the ordinary Englishman. If we add to this the existence of numerous and discordant copies of Homer, we have abundant reason for the growth of that large army of commentators, grammarians, and lexicographers which characterized the schools of Alexandria and laid the foundations of literary criticism. A minute investigation of the grammatical facts of the Greek language was rendered necessary, and a comparison of the older and later forms of the language as well as of its dialects grounded this investigation upon a comparatively secure basis. The metaphysical turn, however, given to the

first linguistic inquiries still overshadowed the whole study, and the absurd and misleading "science of etymology" remained to the last the evil genius of Greek philology. The old dispute as to the origin of words now assumed a new form, mainly through the influence of the Stoic and Epicurean systems of philosophy, and the schools of Alexandria were divided into the two contending factions of Analogists and Anomalists. The first, among whom was counted the famous Homeric critic Aristarchus, found in language a strict law of analogy between concept and word, which was wholly denied by the others. It was round this question that Greek philology ranged itself from the third century B.C. to the first century A.D., and out of the controversy it occasioned was formed that Greek grammar which created the scholars of the last four hundred years, and is still so widely taught in our own country. Thus Aristarchus, for instance, in his anxiety to smooth away every irregularity and remove all exceptions to the rules he had formulated, determined that the genitive and dative of Ζεύς should no longer be Διός or Ζῆνος, but Ζεός, and Ζεΐ, and the endeavours of his opponents to upset this piece of pedantry led to the discovery of other similar exceptions to the general rule, and to the complete settlement of this portion of the grammar. Krates of Mallos, the head of the Pergamenian school, stands forward as the chief rival of Aristarchus on the opposite side. In his hands "anomaly" was made the leading principle of language, and general rules of any sort flatly denied, except in so far as they were consecrated by custom. The purism of his opponents, who wished to correct everything which

contravened the grammatical laws they had laid down, was thus met by an unqualified defence of the rights of usage—"quem penes arbitrium est et jus et norma loquendi." Our own schoolmasters who have introduced an *l* into *could* (*coud*), the past tense of *can*, because *should* from *shall* has one, or have prefixed a *w* to *whole*, the twin-brother of *hale* (Greek καλός), because of the analogy of *wheel* and *which*, are the fitting successors of the Alexandrine Analogists, and it was unfortunate for both that they had no Aristophanes to transfer them to cloudland, and ridicule them in the light of common sense.

Krates, however, has better claims upon our attention than as leader of the Anomalists. To him we owe the first formal Greek grammar and collection of the grammatical facts obtained by the labours of the Alexandrine critics. That a formal grammar, which implies an enunciation of general rules as well as of the exceptions to them, should have been the work of an Anomalist rather than of an Analogist, may at first sight seem surprising; but we must recollect that the Anomalist did not deny the existence of general rules altogether, but only their universal and unqualified applicability; while the Analogist who sought to produce an artificial uniformity in language instead of accepting the facts of speech as they are, was totally unfitted for composing a practical grammar.[1]

The immediate cause, however, of the grammar in

[1] Anomalist as he was, moreover, Krates was not blind to the defects of language as it was commonly used, and it would appear that the ninth book of his Satires was devoted to the reform of orthography.

question was really the tardy comparison of Greek with a foreign tongue, the Latin, and the need of a Greek grammar felt by the citizens of Rome. Appius Claudius Cæcus (censor in B.C. 312) had already written upon grammar,[1] and Spurius Carvilius, a writing-master (B.C. 234), had regulated the Latin alphabet, substituting the indispensable *g* for the useless *z*, and when Krates came to Rome in 159 B.C., as the Ambassador of Attalus, the King of Pergamos, he found a ready audience for his ἀκροάσεις, or "lectures" upon the study of Greek. Almost all that the Romans knew of literary culture and civilization came from the Greeks; their native literature was coarse and insignificant, and their language uncultivated and inflexible. Education at Rome, therefore, meant education upon Greek models and in the Greek language. Boys learned Greek before they learned Latin, and the Greek words with which the plays of Plautus are strewn, as well as their Alexandrine origin, show pretty plainly that a familiarity with the language of Greece was not confined to the literary *salon* of a Scipio, or the houses of a wealthy aristocracy. Livius Andronicus, the father of Latin literature, was a Greek professor (272 B.C.), and his translation of the "Odyssey" into Latin was doubtless for the use of his pupils;[2] the first history of Rome,

[1] He introduced the practice of writing *r* between two vowels instead of *s*, and banished the use of *z* "because its pronunciation resembles the sound that passes through the teeth of a dying man" (Pomp. Dig. i. 2, 2, 36, Mart. Cap. i. 3, § 261, ed. Kopp). Panætius had read his poetical "Maxims," or "Sententiæ," which Cicero calls "Pythagorean" (Tusc. iv. 2, 4).

[2] Max Müller: "Lectures on the Science of Language" (eighth edition, 1875), p. 111.

that of Fabius Pictor (in 200 B.C.), was written in Greek; and even a popular tribune like Tiberius Gracchus published the Greek speech he had made at Rhodes. In fact, a knowledge of Greek was necessary not only for acquiring the barest amount of culture and education, but even for a proper acquaintance with the Latin language itself. Partly through its stiff and cumbrous immobility, partly through the want of originality in its speakers, Latin literature and Latin oratory were alike impossible without the genial and fructifying influence of the Greek. With Greek teachers and Greek models, a native literature came into existence, and the language was artificially trained to become a suitable instrument for communication between the more polished nations of the ancient world and their Roman masters. It is true that classical Latin was really more or less of a hothouse exotic, interesting therefore rather to the student of literature than to the student of linguistic science; but the attempt to rear and nurture it, to keep it unpolluted by the spoken dialects of Rome or the provinces, and to confine it within the rules and metres of a foreign rhythm made it the seedplot of grammatical questions and philological investigations. The study of grammar was of practical importance to the practical Roman; he applied himself to it with all the energy of his nature, and treated the whole subject in a practical rather than a philosophical way. Julius Cæsar, the type and impersonation of the Roman spirit, found time to compose a work, "De Analogiâ," and invent the term *ablative*, amid the distractions of political life, and even Cato with all his dogged conservatism, learnt Greek in his old age in order

that he might be able to teach it to his son. The zeal with which the deepest problems of grammar were discussed seems strange to us of to-day, but upon the settlement of these problems depended the possibility of making Latin the vehicle of law and oratory, and preventing the Roman world from becoming Greek.

The first school grammar ever written in Europe was the Greek grammar of Dionysius Thrax, a pupil of Aristarchus, which he published at Rome in the time of Pompey. The grammar is still in existence,[1] and its opening sentence, in which grammar is defined as "a practical acquaintance" with the language of literary men, and divided into six parts—accentuation and phonology, explanation of figurative expressions, definition, etymology, general rules of flection, and critical canons[2]—has formed the starting-point of the innumerable school-grammars which have since seen the light. It has also been the cause of much of that absurd etymologizing which the Romans received from the Greeks and handed on to the lexicographers of modern Europe. Not content with transcribing the grotesque etymologies of their Greek teachers, the Latin writers strove to emulate them by still more grotesque etymologies of their own. Lucius Ælius Stilo, of

[1] It is given in Bekker's "Anecdota," pp. 629-643. Its authenticity is satisfactorily defended by Lersch, "Sprachphilosophie der Alten," ii. pp. 64-103.

[2] *Γραμματική ἐστιν ἐμπειρία τῶν παρὰ ποιηταῖς τε καὶ συγγραφεῦσιν ὡς ἐπὶ τὸ πολὺ λεγομένων. Μέρη δὲ αὐτῆς εἰσὶν ἓξ· πρῶτον ἀνάγνωσις ἐντριβὴς κατὰ προσῳδίαν, δεύτερον ἐξήγησις κατὰ τοὺς ἐνυπάρχοντας ποιητικοὺς τρόπους, τρίτον γλωσσῶν τε καὶ ἱστοριῶν πρόχειρος ἀπόδοσις, τέταρτον ἐτυμολογίας εὕρεσις, πέμπτον ἀναλογίας ἐκλογισμός, ἕκτον κρίσις ποιημάτων, ὃ δὴ κάλλιστόν ἐστι πάντων τῶν ἐν τῇ τέχνῃ.*

Lanuvium, about 100 B.C. first gave a course of lectures on Latin literature and rhetoric, and one of his pupils, Marcus Terentius Varro, wrote five books, "De Linguâ Latinâ," which he dedicated to his friend Cicero. The "science" of Latin etymology was now founded, and a fruitful field opened to future explorers. Every word had to be provided with a derivation, and on the received principles of etymology this was no difficult task. By the law of *antiphrasis*, *bellum* is made the neuter of *bellus*, "because there is *nothing* beautiful in war;" and *parcus* is so named because the niggard "spares (*parcere*) nobody." It has been left to the vagaries of a later day to excel the Romans in this part of their labours. The lawyers tell us that *parliament* is derived from *parler*, "to speak," *mentem*, "one's mind;" Junius[1] that the

[1] A good idea of the character of his etymologizing may be gathered from the following quotation:—"*Pestis* nomen factum est per syncopen ex composito *perestis*, et mutato *r* in *s* (ut sæpe factum est), *pesestis* sive *pesestas*, a verbo *per-edo*, *per-es*, *per-est*; quo significatur, quidquid *peredit* et plane consumit et *perdit* materiam quamque, unde facta est, ut lues illa epidemica pestis appellationem obtinuerat." Elsewhere he asserts that *sin* is derived from σίνειν, while *so* is merely ὥς reversed. But Junius is quite equalled by Scaliger, Voss, Wachter, and other philologists of the same school. Thus Scaliger says ("De Caus." c. 35):—"*Ordinis* nomen Græcum est. Dicebant militibus tribuni—'Hactenus tibi licet; hic consistes: eò progrediere, huc revertere; ὅρον δῶ,' inde *ordo*;" and again ("De Caus." c. 28) that *quatuor* is κατερα, *i.e.* και ετερα (the aspirate being dropped as among the Æolians), because when the Latins had counted "unum, alterum, tria; pro *quarto* dixere *et alterum*." Scaliger, again, agrees with Voss in deriving "*opacus* ex *Ope*, hoc est, *terrâ*; nam umbræ et frigoris captandi causa in subterraneos se specus abdebant," and *pomum* from πῶμα, because most fruits quench the thirst. Voss identifies the Latin *rus* with the Greek ἄρουρα, "præciso *a*," and declares: "ab ἔπω, qua notat *operor*, venit Latinum *opus*." Perhaps the

*soul* is "the well of life" from the Greek ζάω, "to live," and the Teutonic *wala*, "well," while *merry* comes from μυρίζειν, because the ancients anointed themselves at feasts; and a book entitled "Ereuna," published as late as the year of grace 1875, would raise the envy of a Latin etymologist. When we find Jupiter (Diespiter) gravely derived in it from the "Celtic" *oyo-meir*, "infinite," and *peitir*, "a thunderbolt;" *Nemesis* discovered to be the "Celtic" *neam-aire*, "pitiless," and *manna man-neam*, "food of heaven"—we may trace the last results of that unhappy disease of "popular etymologizing" which it is the work of comparative philology to cure.[1]

various etymologies proposed for the word *cause* by Perottus will give the best illustration of what once passed for "a true account of the origin of words." It is either (1) from *chaos*, as being the first cause of things, or (2) from καῦσις, because heat "kindles and inflames us" to action, or (3) "a cavendo," because a cause forewarns ("cavet") us that something should or should not be done, or, finally (4), "a casu, quia causa accidit." To these Voss adds a fresh possibility, that *causa* comes from "*caiso*," that is, "quærere seu petere." Perottus, again, derives "*locusta* ex *locus* et *ustus*, quod tactu multa urat, morsu vero omnia erodat." We cannot but be struck by the ingenuity of these old scholars. Wachter, however, offers us equally absurd etymologies in the field of modern High German. Thus he brings *kämpfen* (from *campus*) from *kam*, "the fist," *cat* from *ge-wachten*, the French *guêter* (!), and agrees with Clauberg in making *neigen* the source of *nacht*.

[1] Where there is so much to choose from it is difficult to select; but perhaps the richest morsels of the book are the reference of the Latin suffix *-or* in words like *sonorous*, as well as the final syllable of Hebrew words like *tabor*, to the "Celtic" *mhor*, "great," and the derivation of the Egyptian Rameses from the "Celtic" *raromeireas*, "gasconading." The author, however, cannot claim to be *facile princeps* of the year in the matter of bad etymologizing. A certain Mr. Boult has printed two papers, read before the Literary and Philosophical Society of Liverpool, in which, among other novel statements, he informs us that *city* is derived from the

The introduction of Greek grammar into Rome, however, was attended by another evil than the propagation of a false system of etymology. The technical terms of Greek grammar were in many cases misunderstood, and, accordingly, mistranslated. Thus, in the province of phonology, the mutes were divided into the ψιλά (*k*, *t*, *p*), and their corresponding "rough" or aspirated sounds (δασέα), the soft *g*, *d*, and *b* being placed between the ψιλά and δασέα, and consequently named μέσα, or "middle." The Romans rendered μέσα by *mediæ*, and δασέα by *aspiratæ*, but ψιλά they mistranslated *tenues*, and the mistranslation still causes confusion in modern treatises on pronunciation. Similarly, *genitivus*, the "genitive" or case of "origin," is a blundering misrepresentation of the Greek γενική, or case of "the genus," a wholly different conception; and *accusativus*, "the accusative," or case "of accusing," perpetuates the mistake which saw in the Greek αἰτιατική a derivative from αἰτιάομαι, to "blame," instead of αἰτία, "an object;" while the Greek ἀπαρέμφατος signifies "without a secondary meaning" of tense or person, and not "the indefinite" or "indetermining" as the Latin *infinitivus* would imply. We still suffer from the errors made in transferring to Rome the grammatical terminology of Alexandria.

The Romans continued to take an interest in questions of grammar and of etymology down to the last. It is true that they confined their inquiries to their own and

"Celtic" *sigh-tigh* or "peace-house;" *count* from *co-meas*, "united assessment," *alderman* from *all-dor-meann*, "chief of the great door," and *custom* from *cus-do-meas*, "rent of assessment." It is needless to observe that "Celtic" with both writers means the decayed forms of an Irish dictionary.

the Greek language; the descent they claimed from Æneas and the Trojans inspired them with no desire to investigate the dialects of Asia, and even the Etruscan language and literature which lingered on almost to the Christian era at their own doors, were left unregarded by the leading philologists of Rome. In language, as in everything else, the provincial had to adapt himself to the prejudices of his conqueror. Never before or since has the principle of centralization been carried out with greater logical precision. Even Cæsar who found time to discuss grammatical questions in the midst of his campaigns in Gaul, never troubled himself to examine the language of his Gallic adversaries, or to compare the grammatical forms they used with those of Latin.

Passing by the Emperor Claudius, who endeavoured to reform the Roman alphabet, and actually introduced three new letters, we come to Apollonius Dyskolus and his son Herodian, two eminent Alexandrine grammarians of the second century. We possess part of the "Syntax" of the former, who specially devoted himself to this branch of the subject, and expressed himself so briefly and technically (like the grammarians of ancient India) as to gain the name of Dyskolos, "the Difficult." His son Herodian continued the labours of his father, and in the works of these Græco-Roman grammarians we see the long controversy between the Analogists and the Anomalists finally settled. Analogy is recognized as the principle that underlies language; but in actual speech exceptions occur to every rule, and break through the hard-and-fast lines of artificial pedantry. The Greek and Latin school-grammars of our boyhood are the heritage

that has come down to us from this old dispute and its final settlement. Dr. Jolly remarks with justice[1] that the radical fault of these grammatical labours was the confusion between thinking and speaking, between logic and grammar—a confusion which intruded the empirical terminology of formal logic into grammar, and was only dissipated when an investigation of the languages of the East introduced the comparative method into the treatment of speech, and showed that to interpret aright the phænomena of Greek and Latin we must study them in the light of other tongues.

The tradition handed down by Herodian was taken up by Ælius Donatus in the fourth century, and Priscian in the sixth; the former the author of the Latin grammar which dominated the schools of the Middle Ages; the latter of eighteen books on grammar, the most extensive work of the kind we have received from classical antiquity. Priscian flourished at Constantinople during the short revival of the Roman Empire and glory that marked the reign of Justinian; and one of the most noticeable things in his writings is his comparison of Latin with Greek, especially the Æolic dialect. In this he followed Tyrannio or Diokles, the manumitted slave of Cicero's wife and the author of a treatise "On the Derivation of the Latin Language from the Greek." Donatus and Priscian were the philological lights of Europe for more than a thousand years, and such lights were little better than darkness. Once, and once only, was an attempt made to break down their monopoly and to introduce oriental learning into Western education.

[1] "Whitney's Sprachwissenschaft," p. 660.

Pope Clement V., at the Council of Vienne in 1311, exhorted the four great Universities of Europe—Paris, Bologna, Salamanca, and Oxford—to establish two Chairs of Hebrew, two of Arabic, and two of Chaldee, in order that their students might be able to dispute successfully with Jews and Mohammedans. About the same time Dante, in his treatise "De Vulgari Eloquentiâ," compared the dialects of Italy, and selected one which he calls "Illustrious, Cardinal and Courtly," spoken wherever education and refinement were to be found, and sprung from the brilliant Sicilian court of Frederick II.[1]—a dialect destined to become the language of the "Divina Commedia" and the nursing-mother of the languages and literatures of modern Europe. But elsewhere the "Doctrinale puerorum" of the priest Alexander de Villa Dei, or Villedieu, of Paris, written in leonine verses, was the sole grammar taught and learnt; and the Latin dictionary of Giovanni de Balbis, of Genoa, was the only guide to Latin literature. No wonder that Roger Bacon, in his "Opus Majus,"[2] has to lay down that Greek, Hebrew, and Latin are three separate and independent languages, which must be learned and treated separately and independently, and that "those words only which are derived from Greek and Hebrew ought to be interpreted by those tongues, since those which are purely Latin cannot be explained except by Latin words." "For," he goes on

[1] "De Vulg. El." I. xii. p. 46, cxvi. (ed. Fraticelli, 1833).

[2] Ed. Jebb (1733), pp. 44-56. We may notice that Bacon in this part of his book (p. 44) draws attention to the existence of the French ("Gallicorum"), Picard, Norman, and Burgundian dialects in France, which differ from one another in many idioms and uses of words.

to say, "Latin pure and simple is quite different from every other language, and therefore cannot be interpreted from any other." The most approved scholars and etymologists of his day amused themselves by deriving *amen* from the Latin *a*, "without," and the Greek *mene* (? μείων), "defect," *parascene* (*parasceve*) from the Latin *parare* and *cæna*, and *cælum* from the hybrid *case-helios*, or "house of the sun"(!), much in the same way that Jacobus de Voragine, the genial author of the "Legenda Aurea,"[1] derives Clemens from "cleos, quod est gloria, et mens, quasi gloriosa mens;" and says of the name Cæcilia, "quasi *cæli lilia*, vel *cæcis via*, vel a *cælo* et *lya:* vel Cæcilia quasi *cæcitate carens;* vel dicitur a *cælo* et *leos* quod est populus."

But even the older Humanists were not much better. They knelt before the spirit of classical antiquity with a worship at once child-like and unreasoning. Their object was to write and speak Latin correctly—that is to say, in accordance with the usage of certain literary men of Rome, not to discover the grounds on which this usage rested. Switheim declares that it matters as little to know why this or that verb governs a case, as it does to to know why *bin*, the Latin *sum*, "governs the nominative, *ich*, *ego*." "We can say that the verb governs the nominative, because it was once so agreed among the grammarians of antiquity that the verb should govern the nominative *ante se*. If it had been agreed among the ancients that the object of the verb should be in the accusative, the verb would govern the accusative." The grammatical term "to govern" was, by the way, a legacy

[1] Edited by Graesse (1850).

bequeathed by the schoolmen; and a very mischievous legacy it was. Priscian does not yet know it, though it is found in Consentius. Unreasoning and unreasonable, however, as the Humanists were in their treatment of grammar, they were outdone by the orthodox who found in the "errors" of the Vulgate—such as *Da mihi bibere*—direct proofs of Divine inspiration, and the power of the Holy Spirit to override the usual rules of grammar. Johannes de Gallandia, for instance, states boldly:—"Pagina divina non vult se subdere legi Grammatices, nec vult illius arte regi." So, again, Smaragdus writes in reference to the rule laid down by Donatus, that *scalæ*, *scopæ*, *quadrigæ* must be used in the plural: "We shall not follow him because we know that the Holy Spirit has always (namely, in the Vulgate) employed these words in the singular."[1]

We have seen that a knowledge of more than one language is an indispensable preliminary to the formation of a grammar of either; we have seen also that it was among the Semites of Babylonia and Assyria that the earliest grammatical essays were first made. The impulse given to grammatical studies by these attempts did not survive the fall of Babylon; and though the Jewish schools in Babylonia and elsewhere were forced to accompany the extinct Hebrew of their sacred books with glosses and commentaries in Aramaic, they produced nothing that can be called with any truth a grammatical work. It was not until the foundation of the School of Edessa, in the sixth century, that the traditions of the

[1] See Thurot: "Extraits de divers Manuscrits latins pour servir à l'histoire des Doctrines grammaticales au Moyen Age" (1869).

scribes of Assur-bani-pal were taken up by their successors in Mesopotamia. The study of Greek for ecclesiastical purposes among the Syrian Christians led to the compilation of a Syriac grammar; and Jacob of Edessa (A.D. 650–700) succeeded in elaborating one which served as a model for all succeeding works. His whole grammar, however, was based on that of the Greeks, and his terminology was either borrowed directly from the Greek, or formed after the analogy of his Greek originals. Jacob, to whom the systematization of the Syriac vowel-points is to be ascribed, was followed by Elias of Nisibis (eleventh century), and John Barzugbi (thirteenth century), who, says M. Renan, "may be regarded as the author of the first complete grammar of the Syriac language."[1] The Arabs were not slow to imitate the example of their Syrian neighbours. The preservation of the text of the Korân turned their attention to philological studies at an early period; and we may assign the real foundation of Arabic grammar to the end of the seventh century, when Abul-Aswed (who died 688 A.D.) introduced the diacritical points and vowel-signs, and wrote some treatises on several questions of grammar. His labours were continued in the schools of Basra and Kufa, and Sibawaih (770), the oldest grammarian whose works have come down to us, shows us Arabic grammar almost complete. His successors, as M. Renan remarks, did little more than fill out the details of his teaching; and in the fifteenth century, Suyuthi knows of no less than 2,500 grammarians who had made a name in Arabic literature.

[1] "Histoire des Langues sémitiques," p. 272.

With Syriac and Arabic grammars thus formed, and the doctrine of triliteral roots enunciated, all that was wanting was to work out a comparative grammar of the Semitic dialects. Just as the grammarians of Greece and Rome had perceived the connection that existed between the two languages, and in their haphazard and arbitrary fashion had endeavoured to trace the origin of Latin words to Greek sources, so the relationship between the Semitic idioms could not but be detected as soon as serious labours were commenced upon them; and the closeness of this relationship prevented the errors and absurdities into which the classical grammarians were betrayed by their ignorance of other tongues. To the Jews belongs the merit of first formulating what we may term a comparative grammar. The Saboreans and Masoretes in the sixth century did for the Old Testament what the Alexandrine Greeks had done for Homer, the Arabs for the Korân, and the Hindus for the Veda; and in the tenth century a Hebrew grammar was founded under Arabic influence, and with it a comparative grammar of the Semitic languages. The Jews, who had warmly received Mohammedan culture, and even become intermediaries between their Arabic masters and the "infidel" philosophy of Greece, were necessarily bilingual; and the first fruits of this necessity were the grammatical works of the Gaon, Saadia-el-Fayyumi (who died 942). After Saadia came Menahem-ben-Seruk of Tortosa (960), and Dunash-ben-Librât of Fez (970), who composed the first works on Hebrew lexicography, among whom the last declares that he "compares the relation of Arabic and Hebrew, counts all the genuine words of Arabic which

are found in Hebrew, and points out that Hebrew is pure Arabic." About the same time Judah Khayyug of Fez gave an exhaustive account of defective roots and the permutation of servile letters, while Jonah ben Gannach of Cordova (in Arabic Abul Walid Mervan-ibn-Janah), in the eleventh century, completed the grammatical labours of his predecessors.

With the decline of Arabic supremacy and the introduction of Neo-Hebrew arose a new school of Hebrew philology, of which the Kimchi of Narbonne (A.D. 1200) are the leading representatives. This school was less comparative than the foregoing, and the rabbinical spirit that prevailed in it, though conducing to minute accuracy, was not favourable to philological progress. It was, however, the instructor of the Christian scholars of the Renaissance, whose zeal for knowledge and learning brought the study of Hebrew and its cognate languages within the circle of European thought. The Reformation, breaking as it did with the mediæval Church, and making its appeal to the Scriptures themselves, made a knowledge of the original language of the Old Testament indispensable. Christian scholars like Reuchlin, the two Buxtorfs, Richard Simon, Ludolf, Schultens, or our own Castell and Pococke, devoted themselves to a study of Semitic philology with the same energy and success as men like the Stephenses, the Scaligers, and the Vosses to a study of classical philology. Lexicons and grammars were compiled, texts were critically examined and edited, and a comparative dictionary of the Semitic languages was brought out. It was inevitable that men who were at once masters of Hebrew and Greek should discover re-

semblances and coincidences between the two languages. Hebrew grammar was cast into a classical mould, and Latin and Greek words were derived from Hebrew roots. Hebrew, it was argued, was the sacred language which had been spoken by Adam and the patriarchs, since the names of our first parents and their offspring are of Hebrew origin; and it was therefore clear that Hebrew must have been the primæval speech used before the confusion of tongues at Babel, the primitive source from which the manifold dialects of the world have been derived. A new etymological system accordingly sprang up, quite as grotesque in its rules and its results as the old etymological system of Greece and Rome; and dictionaries of Latin and English appeared in which every word was provided with its Hebrew original.[1] Since Hebrew is written from right to left, it was assumed that a Hebrew root could be read the reverse way if a satisfactory etymology was not otherwise forthcoming; and as the profane languages might be expected to retain some reminiscences of their sacred mother, a similar procedure was adopted to connect words in English and the classical tongues with one another, and so *stum* was proved to come from the Latin *mustum*, and the Latin *forma* from the Greek μορφή. It was not the only instance in which theological prepossessions have injured the cause of philology.

With Herder and Lessing, however, a new era of thought and philosophy began. The mechanical explanation of the world was superseded by a psychological one; the idea of development took the place of the idea

[1] Thus Voss derives νεός from the Hebrew particle *nâ*, "now."

of contract and convention. Herder devoted a special treatise to the "Ideal of Speech,"[1] and a prize offered by the Berlin Academy for the best essay on "the Ideal of a Perfect Language," was won by Jenisch in 1796. The work of Jenisch bore the ambitious title, "A philosophico-critical Comparison and Estimate of Fourteen of the Ancient and Modern Languages of Europe, viz., Greek, Latin, Italian, Spanish, Portuguese, French, English, German, Dutch, Danish, Swedish, Polish, Russian, Lithuanian." But Jenisch was still under the dominion of the assumption which made the Roman jurist discover his *jus gentium* in those points in which the laws of different nations agreed; he finds the ideal of a perfect language in the fourteen languages of his title, all deviations from their grammar being characterized as "less perfect formations." Richness in the vocabulary, expressiveness, clearness, and euphony are the four marks of superiority. The value of Jenisch's lucubrations, however, may be judged from his statement that the Greek case-endings were probably modelled after those of Hebrew. It needed the genius of Herder to recognize that the language of a people is but the expression of its spiritual life, and to lay down in his "Ideen" (1785) that "in each language the understanding and character of its speakers reflects itself." A step forward was made by Mahn in his "Representation of Lexicography from every Point of View," published in 1817. In this (p. 264) he divides the history of speech into three periods corresponding with the periods in the life of the individual—

[1] See second edition of first collection of "Fragmente zur deutschen Literatur" (1768).

childhood, youth, and age—severally distinguished by memory, imagination, and intellect. The first period is that in which language was formed, the second that in which it was perfected, the third that in which it was made logical.

If language is logical it is evident that the categories of grammar ought to correspond with the categories of logic, and attempts were accordingly made to sketch the outlines of a universal grammar. In 1801 Vater brought out his "Versuch einer allgemeinen Sprachlehre," with an introduction on the nature and origin of speech, and an appendix on the adaptation of the rules of universal grammar to those of the grammars of individual tongues. But Vater chose "the high *priori* road;" he assumed that the first men spoke in accordance with the forms of logic, and instead of tracing the history of grammar in the records of living speech, made that alone normal and correct which seemed to himself to be so. This work of Vater's was followed, three years later, by a translation of De Sacy's "Axioms of Universal Philology," and in 1805 by a "Lehrbuch allgemeiner Grammatik." Comparative grammar is defined as a setting side by side of the forms of different languages for the sake of reaching that which is "common" to them; but this definition is only scientific in appearance; what is "common" turns out to be not the original forms of a parent-speech, but the forms which a philosopher of the eighteenth century believed to lie at the bottom of "universal grammar."

This idea of a universal grammar was due partly to the influence of an age which believed the ultimate analyses of logic to represent the thoughts of primitive

man, partly to the unmethodical comparison of a variety of languages, some ancient, some modern, and some as unrelated to one another as Greek and Hebrew. But it was also in some measure the result of a revived study of the old Greek theories about language. Our countryman James Harris led the way with his "Hermes, or a Philosophical Enquiry concerning Universal Grammar" (1765). The work was an important one, for it not only stimulated an interest in linguistic studies, but also recalled attention to the labours of those who had built up the framework of our school grammars. Harris was succeeded by Horne Tooke, whose "Diversions of Purley," however imperfect and erroneous from the point of view of modern scientific philology, threw a charm over what had hitherto seemed repulsive inquiries into the words and forms of speech, and laid down the axiom that we must first investigate the older forms of a language before we can determine the origin and nature of their later equivalents. But Horne Tooke's work was composed in the interests of a philosophical theory, and its keynote is struck in the assertion that *truth* is that which a man *troweth*. Things are but the reflection of words, and words are what men deliberately make them. Grammar is no organic growth, but the mechanical invention of mankind. And just as the first men framed it in ignorance and imperfection, so the philosophers of the eighteenth century could reframe it according to the requirements of formal logic. It was the old mistake of the Greek Analogists over again, only with the difference that they thought of the grammar of a single language alone, whereas the more ambitious

philologists of the "Aufklärung" aimed at producing a grammar which would be applicable to all tongues.

The French Encyclopædia was the manifesto of the "Aufklärung," and the Encyclopædia devoted six of its volumes to grammar and literature. Grammar is divided into general and particular, and while general grammar is defined as "la science raisonnée des principes immuables et généraux de la parole prononcée ou écrite dans toutes les langues," particular grammar is defined as "the art of applying to the immutable and general principles of the word whether pronounced or written the arbitrary and customary usages (*institutions*) of a special language." In accordance with the lines thus traced out, Gottfried Hermann, in 1801, published his work, "De emendendâ ratione Græcæ Grammaticæ," and G. M. Roth brought out his "Antihermes, or Philosophical Researches into the pure apprehension of Human Speech and Universal Philology" in 1795, and his "Outlines of pure Universal Philology for the use of Academies and advanced classes in the Gymnasia" in 1815. As yet neither families of speech nor the morphology of language were even dreamt of; and the "principles" derived from the school grammars of Greece and Rome, supplemented by the categories of modern philosophical systems, were supposed to apply to all languages alike. It was reserved for A. F. Bernhardi, the pupil of F. A. Wolf and Fichte, the friend of Tieck and Schlegel, to approach towards a truer conception of the nature and relationship of speech in his "Sprachlehre," which he dedicated to his master Wolf. The first part of this work appeared at Berlin in 1801, under the title

of "Reine Sprachlehre," the second part, "Angewandte Sprachlehre," being published in 1803, and the third part, "Anfangsgründe der Sprachwissenschaft," in 1805. Bernhardi first caught sight of the fact that whereas, from a purely scientific point of view, the grammar of every language follows its own independent and peculiar line, for practical purposes we must dwell mainly upon those particulars in which it agrees with the grammars of other tongues.[1] According to Haym his book was "the first entrance of the spirit of the romantic movement into the sphere of real science." Language is defined "as an allegory of the understanding, which expresses and represents itself, according to its inherent nature, through this externalization." Hence a connection is sought between the sound and the thing signified; the initial liquid of *light*, for instance, indicates the sense of the word, whether used as a substantive or as an adjective. In the second part of his work Bernhardi discusses the relation of language to poetry on the one side, and to science on the other, and, as might have been expected from his definition of it as an allegory, regards it as being in its very essence the lyrical utterance of the primitive poet.[2]

Meanwhile the etymologists went on with their work of random guessing, with little heed to the labours of continental scholars upon a philosophy of grammar. In

[1] See Pott: "W. von Humboldt's Verschiedenheit des menschlichen Sprachbaues" (1876), I. p. cciv.

[2] On this book of Bernhardi's was founded Reinbeck's "Handbuch der Sprachwissenschaft, mit besonderer Hinsicht auf die Deutsche Sprache" (1815)—intended for school use.

this country Dr. Murray's "History of the European Languages" was posthumously published in 1823, in which he holds that all the manifold languages of the world are derived from a single primeval one which consisted of a few monosyllables, AG or WAG being the first articulate sound. To this primeval language the Teutonic, and not the Hebrew, "comes nearest;" and it is only fair to say that the relationship of Sanskrit and Persian to the Aryan dialects of Europe is recognized, and a full account given of the ancient Indian speech. In an appendix Dr. Murray also pointed out what we should now term the Aryan affinities of the Scythian words preserved by the classical authors. But his principles of etymology were the same as those of the Greeks; similarity of sound was sufficient to prove identity of origin. And every word, from whatever quarter it may be gathered, is forced to become a proof or an example of the descent of language from his nine monosyllabic interjections. A volume, published in 1800 by W. Whiter, under the ambitious title of "Etymologicum Magnum, or Universal Etymological Dictionary," is not content even with the limits prescribed to himself by Dr. Murray. English, Greek, Latin, French, Irish, Welsh, Slavonic, Hebrew, Arabic, Gipsey, Coptic, and many more, are all mixed up together with the most impartial prodigality. The character of the work may be judged of by the assertion of the writer, "that from a hord of vagrant Gipsies once issued that band of sturdy robbers—the companions of Romulus and Remus;" this being based on the fact that the Gipsies "are in their own language called Romans, or Romani." After this we need not be sur-

prised at being told that the English *give* and *shaft*, the Hebrew *gabbe* (*sic*), the Chaldee *gavav*, the French *javeau*, the German *garbe*, and the Latin *sparum*, have all one and the same origin ; or that *sepulcrum* is derived from the Hebrew *kabar*, "to bury," and the Celtic *pen* from the Hebrew *phânâh*, "to incline."

What has been termed the discovery of Sanskrit by Western scholars put an end to all this fanciful playing with words and created the science of language. The native grammarians of India had at an early period analyzed both the phonetic sounds and the vocabulary of Sanskrit with astonishing precision, and drawn up a far more scientific system of grammar than the philologists of Alexandria or Rome had been able to attain. The Devanâgari alphabet is a splendid monument of phonological accuracy, and long before the time of Saadia and Khayyug, the Hindu "Vaiyâkaranas," or grammarians, had not only discovered that roots are the ultimate elements of language, but had traced all the words of Sanskrit to a limited number of roots. Their grammatical system and nomenclature rest upon a firm foundation of inductive reasoning, and though based on the phænomena of a single language, show a scientific insight into the nature of speech which has never been surpassed.

It is possible that the democratic movement of Buddhism which broke down caste and raised the inferior dialects and languages of India to the same level as the sacred Sanskrit of the Veda, had much to do with the extraordinary success of the Hindu grammarians. The immediate object of their investigation was the language of the Rig-Veda, which had become obscure

and partly obsolete through the changes wrought by time upon the spoken tongue. The Rig-Veda, pre-eminently called "*the* Veda," is a collection of hymns and poems of various dates, some of which go back to the earliest days of the Aryan invasion of north-western India; the whole collection, however, may be roughly ascribed to at least the fourteenth or fifteenth century B.C. In course of time it came to assume a sacred character, and the theory of inspiration invented to support this goes much beyond the most extreme theory of verbal inspiration ever held in the Jewish or the Christian Church. The Rig-Veda was divided into ten *mandalas* or books, each *mandala* being assigned to some old family; and out of these were formed three new Vedas—the Yajur, the Sâma, and the Âtharva. The Yajur and the Sâma may be described as prayer-books compiled from the Rig for the use of the choristers and the ministers of the priests, and contain little besides what is found in the earliest and most sacred Veda. Along with the latter they sometimes go under the name of the Trayî or "Triad," a name which implies that the Âtharva-Veda was not yet in existence when it was given. In fact, the Âtharva*na* may be described as a collection of poems mixed up with popular sayings, medical advice, magical formulæ, and the like. It was assigned to the Brahman or fourth class of priests, who superintended the ritual, just as the Sâma-Veda was assigned to the choristers, the Yajur-Veda to the acolytes, to whom the manual work involved in a sacrifice was delegated, and the Rig-Veda to the Hotri, or priest proper, who had to recite portions of it, whence its name of Rig, or "Praise."

The period that must have elapsed before the hymns of the Rig could have been collected together, invested with a sacred character, and elaborated into a ritual, must have been considerable; but not until this was done, and the three supplementary Vedas composed, was the whole Veda or depository of sacred "knowledge" complete. At a later date came the Brâhmanas, or commentaries on the Veda, the object of which was to explain obscure passages in the old hymns, and the erroneous and absurd explanations sometimes offered show pretty plainly how much both the language and the ideas of the people had changed. The sacredness of the Veda was reflected upon the Brâhmanas themselves, and a time came when they too began to be regarded as divine, and to be superseded by the Sûtras, the "strings" or manuals of the grammarians. The diffuse style of the Brâhmanas made way for the scientific brevity of the Sûtras, and Hindu literature entered upon its Alexandrine stage. Even the grammar of the Brâhmanas became archaic; and accordingly, though the Veda was the primary object of the grammarians' labours, the Brâhmanas also had a share in their regard. The Sûtras endeavour to explain the Veda and all connected with it—a principal part of their work being naturally an explanation of the Vedic language and grammar. But, before this could be effected, an accurate register of the facts was required, and the Masoretes of India accordingly divided and counted, not only the verses and words, but even the syllables of the Rig-Veda. According to 'Saunaka, the teacher of Kâtyâyana, the 1,028 hymns of the Rig-Veda contain 10,616 (or 10,622) verses, 153,826 words (*padas*), and 432,000 syllables,

eleven of the hymns being of later date than the rest; and since the number of syllables and words given by 'Saunaka is the number found in our present texts, it is clear that the Rig-Veda has been handed down, from the sixth century B.C. to our own day, with the most perfect precision. This is the more astonishing at first sight, from its being handed down orally alone; but the labours of 'Saunaka and his brother scholars had much to do with the result. The numbering of the syllables of the Veda led to the formation of the so-called Pada-text, in which the single words are divided one from another, instead of being run together in accordance with the laws of Sandhi. These laws require that the final letter of a word should be modified by the initial letter of the word that follows, the consequence being that two separate syllables (as in *tad 'srutwâ*, "having heard that") are made to coalesce into one (*tachchhrutwâ*). To resolve these amalgamated syllables was to discover the phonetic rules and principles which regulated the pronunciation of Sanskrit, and to lay the foundation of a scientific phonology.

But a more important work remained behind. Kautsa, a grammarian of the fifth or sixth century B.C., tells us that the language of the Rig-Veda had by that time become so obsolete as to be understood with difficulty, and yet the exact recital of the hymns had come to be regarded as indispensable for the performance of religious service. The Prâti'sâkhyas, the oldest production of the grammatical school, show a surprising acquaintance with the physiological facts of phonetic utterance, and far surpass the most advanced labours of the Greeks in the

same direction. The Nighantavas, a little later, contain a list of rare Vedic words, and perhaps started the controversy which broke out shortly afterwards among the grammarians as to the origin of the nouns. 'Sâkaṭâyana and his followers, the Nairuktas, or Etymologists, maintained that they were all derived from verbs; while his opponents, Gârgya and others, called the Vaiyâkaranas or Analyzers, sought to show that some at least had a different origin. In the end, however, the party of 'Sâkaṭâyana proved victorious, and the result was not only the formation of the Sanskrit dictionary, but, what was far more important, the clear enunciation of the doctrine of roots. In the hands of Yâska and Pânini the doctrine became fruitful in consequences; the classical language of India was thoroughly analyzed, and the essential part of each word marked off from its formative suffixes. In short, a scientific grammar was created. The *Nirukta*, or "Etymology," of Yâska is a model of method and conciseness, though it is thrown into the shade by the grammar of Pânini. This was the crowning work of the Hindu grammarians, and, composed as it was in the fourth century B.C., may well excite our astonishment and admiration. In eight books, and about 4,000 short rules, it sums up the principles of Sanskrit phonology, the declension of the noun and the conjugation of the verb (which agree in the main with those worked out by the Greek grammarians), the nature of the adverbs and other particles, the rules of syntax, which are interspersed among the various divisions of the accidence, the etymology of words, with an exhaustive list of "primary" and "secondary" formative suffixes, and a minute analysis

of composition which has been the basis of modern attempts to deal with this intricate subject. As an appendix to his Grammar, Pânini also compiled a list of roots (*dhâtus*, or "elements"), amounting in all to about 1,700.

The brevity and compactness of the work was much aided by the algebraic system of symbols by which the various terms of grammar were expressed. Thus, in Pânini, a verbal termination is denoted by *l*, the endings of the primary tenses by *lt*, those of the secondary tenses by *ln*, the special tenses and moods being pointed out by an inserted vowel, as *lât* for the present, *lot* for the imperative, and so on. The mathematical character of this device shows the precision with which the several rules of grammar had been ascertained and laid down, as well as the instinctive recognition that there was a science of grammar as well as a science of mathematics It only remained for a later generation of Western scholars to demonstrate that such was really the case.

It may seem strange that this later generation was so long in coming. Already, at the end of the sixteenth century, an Italian, Philippo Sassetti, during a five years' residence in India, had made himself acquainted with Sanskrit, and drew attention to the likeness between the Sanskrit numerals and other words and corresponding words in his native language.[1] Another Italian, Roberto de Nobili, who went to India in 1606 as a missionary, actually transformed himself into a Brahman, in order to win over the Hindus; and after acquiring a knowledge not only of Tamil and Telugu, but also of Sanskrit,

[1] "Lettere," p. 415 *sq.* (Florence, 1855.)

"showed himself in public, dressed in the proper garb of the Brahmans, wearing their cord and their frontal mark, observing their diet, and submitting even to the complicated rules of caste." [1] One of his converts—so at least Professor Max Müller thinks—composed the curious Ezur, or fourth Veda, which professes to be a lost Veda that he came to preach, and "contains a wild mixture of Hindu and Christian doctrine." Fifty years after De Nobili a German missionary, named Heinrich Roth, was able to dispute in Sanskrit with the Brahmans, and in 1740 a Frenchman, Père Pons, sent home a comprehensive and fairly accurate report upon Sanskrit literature. It was not till 1790, however, that the first Sanskrit grammar was published in Europe, at Rome, by two German friars, Hanxleden and Paulinus a Sancto Bartholomeo, whose real name was Philipp Wesdin. Some years before (in 1767) the Frenchmen Cœurdoux and Barthélemy had written from Pondicherry to the Academy to express their opinion that a relationship existed between the vocabularies of Sanskrit, Greek, and Latin, and to prove that this relationship could not be accounted for by the hypothesis of borrowing. Their letter, however, though read in 1768, was not printed until 1808, after the death of Anquetil-Duperron, and at the end of one of his Mémoires. Meanwhile English and German scholars had entered the field, and the opinion expressed by the French missionaries had become a belief of the learned world.

In 1784 the Asiatic Society was founded at Calcutta, and its first members did their utmost to extend a know-

[1] Max Müller: "Lectures," p. 155.

ledge of the Sanskrit language and literature. Halhed, in the preface to his "Grammar of Bengali," published in 1778, had noticed the "similitude of Sanskrit words with those of Persian and Arabic, and even of Latin and Greek;" and Sir William Jones,[1] addressing the Asiatic Society at Calcutta in 1786, states that "no philologer could examine the Sanskrit, Greek, and Latin, without believing them to have sprung from some common source which, perhaps, no longer exists. There is a similar reason," he goes on to say, "though not quite so forcible, for supposing that both the Gothic and Celtic had the same origin with the Sanskrit. The old Persian may be added to the same family."

Here, then, was the great discovery made. It required a man like Sir William Jones, who united the tastes of the poet and *littérateur* with those of the linguistic scholar to overcome the prejudices of a classical education, and to admit that the languages of Greece and Rome had the same origin as the languages of the despised Hindu. It required still greater insight and sobriety to trace them all from a common source, rather than to magnify the newly acquired Oriental speech by making it the parent of the languages of the West; and though we may now smile at his attempt to explain classical mythology by comparing its personages with Indian deities with similarly sounding names, Sir William Jones deserves to be remembered as the pioneer of comparative philology. He stands out in honourable contrast to Dugald Stewart, the Scotch philosopher of common sense, who, in absolute

[1] "Works, with Life," by Lord Teignmouth (1807), iii. p. 34.

ignorance of even a single Sanskrit character, undertook the task of proving that Sanskrit and Sanskrit literature were alike the inventions of the Brahmans, and that they were forged after the model of Greek and Latin in order to deceive European scholars. It was not the first time that philosophy and common sense have found themselves opposed to unwelcome knowledge.

Lord Monboddo, Stewart's fellow-countryman, showed himself a sounder critic and a more unprejudiced inquirer.[1] His friend, Wilkins, the translator of the "Bhagavadgîta" and "Hitopade'sa," and author of a Sanskrit grammar, proved to his satisfaction that Sanskrit was "a richer and in every respect a finer language than even the Greek of Homer," and that the likeness between Sanskrit on the one side, and Greek and Latin on the other, demonstrated the descent of all three from some common primæval tongue. The Scotch judge accordingly found a niche for the new discovery in his theory which derived mankind from two tailless apes, and the languages of the world from the Osirian language of Egypt. Sanskrit, it was plain, had been introduced into India by Osiris, just as Greek had been brought into the Peloponnesus by the Pelasgians. Not only the numerals, "the use of which must have been coeval with civil society," or the words of common life, but even the grammatical forms of a verb like *asmi*, "I am," are produced in evidence of the relationship of the classical languages of Europe and of India. As early as 1795 Lord Monboddo was not far from the discovery of that Indo-

[1] The second edition of his work on Language, in six vols., "with large additions and corrections," was published in 1774.

European family of speech which has been the starting-point and foundation of the science of language.

Both Sir William Jones and Lord Monboddo, however, did no more than draw aside the curtain for a moment and reveal the new world that lay behind. It was reserved for Germany to accomplish what England had begun. The genius of Leibniz had already prepared the way by overthrowing the belief that Hebrew was the original language from which all others are to be traced, and by setting missionaries and others to work in compiling vocabularies, grammars, and phrase-books of the manifold dialects of the world. Thus, in thanking Witsen, the Burgomaster of Amsterdam, for a translation of the Lord's Prayer into Hottentot, he writes: "Remember, I implore you, and remind your Muscovite friends, to make researches in order to procure specimens of the Scythian languages, the Samoyedes, Siberians, Bashkirs, Kalmuks, Tungusians, and others;" and his sound scientific instinct makes him ask (in his "Dissertation on the Origin of Nations," 1710): "Why begin with the unknown instead of the known? It stands to reason that we ought to begin with studying the modern languages which are within our reach, in order to compare them with one another, to discover their differences and affinities, and then to proceed to those which have preceded them in former ages, in order to show their filiation and their origin, and then to ascend, step by step, to the most ancient tongues."[1] He found an illustrious convert in Catherine of Russia, who once shut herself up for nearly

[1] Quoted by Max Müller: "Lectures," i. p. 150.

a year in order to work at her "Comparative Dictionary of Languages," and the "Catalogo delle Lingue conosciute e notizia della loro affinitá e diversitá" (1784) of the Spanish Jesuit missionary, Don Lorenzo Hervas and the "Mithridates" of Adelung and Vater are, as Professor Max Müller has observed, plainly due to his influence. The efforts of Leibniz were seconded in another direction by those of Herder, to whom we may trace the conception of a comparative treatment of literature and a recognition of the merits of literary remains beyond those of Greece and Rome. Herder, as has already been remarked, made the rise of an historical science possible by substituting the idea of development for that of uniform sequence in history, and his treatise on the "Origin of Speech," crowned by the Berlin Academy in 1772, dissipated for ever the theory that language was a miraculous gift and not the slowly evolved creation of the human mind. The German mind was already prepared to seize and unfold the consequences which resulted from the discovery of Sanskrit. It was a poet, Friedrich Schlegel, however, and not a philologist, who first laid down the great fact that the languages of India, Persia, Greece, Italy, Germany, and Slavonia form but one family, daughters of the same mother, and heirs of the same wealth of words and flections. Schlegel learnt Sanskrit while in England during the peace of Amiens (1801-1802), and to his work on "The Language and Wisdom of the Indians," published in 1808, may be traced the foundation of the science of language. All that was now required was some master-scholar who should continue the work begun by Schlegel,

and establish on a deep and firm basis the edifice that he had reared. This master-scholar was found in Francis Bopp.

Bopp, the true founder of comparative philology, made himself acquainted with Sanskrit during a visit to England and the India House library, and in 1816 appeared his famous work, "Das Conjugationssystem," published at Frankfurt, in which a minute and scientific comparison was instituted between the grammatical systems of Sanskrit, Greek, Latin, Persian, and German. It was not until 1833, however, that the first volume of his "Comparative Grammar of Sanskrit, Zend, Greek, Latin, Lithuanian, Slavonic, Gothic, and German" came out, though several minor productions on Comparative Philology had appeared meanwhile, and not until 1852 was the final volume of the Grammar completed. Bopp was the author of the method which must be followed by every student who pretends to a scientific treatment of language; and though there is naturally much in his work that has since needed revision, the main results at which he arrived will always remain among the fundamental truths of linguistic science. His Sanskrit grammars were published in 1827, 1832, and 1834, and his "Vergleichendes Accentuations-System," published in 1854, not only pointed out the striking analogy between the accentuation of Greek and Sanskrit, but also laid the basis of all future inquiries into the subject. But even Homer nods at times; and as if to warn us against following too implicitly any leader, however illustrious, Bopp sought to include the Polynesian dialects in his Indo-European family, and thereby violated the very method

that he had himself inaugurated.[1] His attempt to connect the language of Georgia with the same family was not more fortunate;[2] and though Georgian is undoubtedly inflectional in character, its flections are now known not to be those of the Aryan group, nor its structure and roots those which distinguish an Aryan tongue. Even the errors of a great mind are instructive, and serve to illustrate the soundness of the method which they violate.

Bopp's work was confined to the more strictly scientific and inductive side of comparative philology, to the comparison of words and forms, and the conclusions we may infer therefrom: the metaphysical side of the science of language found an able expositor in Wilhelm von Humboldt. Starting with the new method of Bopp, Humboldt revised the old endeavours to found a philosophy of speech, and extended the results obtained by Bopp to all the manifold languages of the world. In a number of publications, more especially the introduction to his great work on the Kawi language of Java, which came out after his death in 1836,[3] he dealt with the various problems raised by the science and philosophy of language, and not only sketched the general outlines of a true philosophy of speech, but also threw out suggestions which have since borne abundant fruit in the hands of other scholars. Humboldt's work was followed up by Steinthal, whose journal, the "Zeitschrift

[1] "Ueber die Verwandtschaft der malayisch-polynesischen Sprachen mit den indisch-europäischen" (1841).

[2] "Die kaukasischen Glieder des indo-europäischen Sprachstammes," 1847.

[3] See the Edition of Pott, published in two volumes in 1876.

für Völkerpsychologie und Sprachwissenschaft,"[1] conducted with the help of Lazarus, has proved a treasury of suggestive thought to a whole generation of linguistic scholars. Bopp, on the other hand, was followed by Pott, whose vast knowledge and genial insight are probably unequalled among the students of language. His "Etymologische Forschungen," in spite of its size and want of an adequate index, is a mine of philological wealth, and his works on the "Language of the Gipsies" (1846), on "Proper Names" (1856), and on the "Quinary and Vigesimal Systems of Numeration" (1847), have largely helped the progress of linguistic science. In the "Anti-Kaulen," or "Mythical Representations of the Origin of Peoples and Languages" (1865), and "The Inequality of the Races of Men" (1856), where a great display of anthropological knowledge is made, Pott did good service in checking the unifying haste of a young science.

While Humboldt and Pott were laying broad and deep the foundations of the new science of language, Jacob Grimm was applying the method of Bopp in another and more special direction. Instead of endeavouring to grasp the whole vast range of languages, or even those of the Aryan group alone, he devoted himself to the minute and scientific study of one branch of them only, and his "Deutsche Grammatik" (1819-1837) ushered in a new epoch in the history of comparative philology. Benfey, indeed, still carried on with a master's power the labours begun by Bopp and Pott, but he too had by degrees to adapt himself to the spirit of the time, and the fame he has acquired as a Sanskrit scholar

[1] Beginning in 1859.

far outshines that acquired by his brilliant but ineffectual attempt to reduce the Aryan and Semitic families of speech to a single stem, or by his "History of the study of Language and of Oriental Philology in Germany, since the beginning of the sixteenth century" (1869). The time was come for a microscopic rather than a telescopic view of language and languages; the broad outlines of linguistic science had been sketched by its first founders, and what was now wanted was to fill up the details, to apply the general principles of the science to special cases, and, by a close and accurate study of particular languages and dialects, either to confirm or to overthrow the conclusions at which they had arrived. No single man can know thoroughly more than a few languages at the most; for the rest he must be content to trust to the report of others; and however great may be his genius, however wide-reaching his vision, unless the materials he uses have already been sifted and arranged in the light of the comparative method, his most important inferences are likely to be vitiated. Hence the value of the work begun by Grimm, and of the direction in which he turned the course of scientific philology. Erasmus Rask, the Dane, followed up the example thus set with an investigation of the northern languages of Europe, and his researches into the language of the Zend-Avesta, the first ever undertaken by an European scholar, formed the scaffold upon which Eugène Burnouf erected the colossal structure of Zend philology. Burnouf did for Zend and Achæmenian Persian what Grimm had done for the Teutonic languages; his work has been continued by Lassen, Haug,

Spiegel, Justi, and others. Meanwhile the Romance languages were taken in hand by Diez, whose "Comparative Grammar" (1836), and "Comparative Dictionary" (1853),[1] are masterpieces of method and insight. Indeed, they may be said to have created Romance philology altogether. The philology of the Keltic dialects was set on a scientific footing by our own countryman, Prichard, and above all by Zeuss and Stokes, while Miklosich and Schleicher did the same for the Slavonic tongues. Along with his special labours in Slavonic, Schleicher carried on the tradition of a wider and more general treatment of the whole Indo-European family itself, and his "Compendium of Comparative Grammar" (1861-2), in which he endeavoured to restore the grammar of the parent Aryan speech, will ever remain a monument of learning and genius. Schleicher also came forward as the representative of the view which includes the science of language among the physical sciences, and his works, whatever may be thought of the theory that underlies them, have done much to further the progress of linguistic study.

Grimm and his school acted wisely and scientifically in beginning with the modern languages whose phonology and pronunciation, the skeleton of all real linguistic science, can be fully known, and whose idioms, the life-blood, as it were, of language, are still living and familiar. But language, like all things else connected with man and his mind, is a self-developing organism, and as such must be studied historically. Consequently,

[1] A new edition has just been brought out (1878), with a valuable appendix, by Scheler.

though the student of language must start with the modern and living languages of the world, the older languages which lie behind them are of infinite importance, and to neglect them would be as fatal as for the geologist to neglect the older strata of the earth. The relics of ancient speech, preserved in the monuments of Egypt or Assyria, or in the records of Greece and Rome, are as precious as the fossils which enable the palæontologist to trace the history of life upon the globe, and the geologist to explain the origin and structure of the existing rocks. The same method and minute investigation, accordingly, which had effected so much for the Romance and Teutonic dialects, were applied to the study of the classical languages, and, in the hands of G. Curtius and his school, Greek and Latin philology has been revivified and illuminated, and made to yield stores of precious facts to the comparative philologist. The old-fashioned scholarship has become a thing of the past; the various dialects of Italy and Greece have been restored to their true place, and the death-blow given to the system which derived Latin from Greek, or attempted to explain the grammars of the two classical languages by confounding the laws and phænomena peculiar to each. The labours of Lobeck, of Gottfried Hermann, of Passow, of Döderlein, and above all of Philipp Buttmann, whose intuition frequently made him anticipate the conclusions of later discovery, had furnished Curtius with the basis on which the new superstructure might be built, while Corssen, his fellow-labourer in the field of Latin research, found that here also his predecessors had gathered in an almost equal harvest of materials. Com-

parative philology has made it possible for the scientific method to be learnt as well from the study of the classical tongues as from the study of chemistry or geology.

The results acquired in the realm of the Aryan or Indo-European languages served as a starting-point for the investigation of other families of speech. For a long time comparative philology remained practically synonymous with the comparative treatment of the Aryan languages only. But its method was equally applicable to the examination of all other languages throughout the world, and the general laws of language discovered by men like Bopp and Grimm might be expected to hold good of all languages and dialects whatsoever. Furnished with the new scientific method and the principles upon which it was based, scholars next attacked those Semitic languages whose inflectional structure seemed to bring them into such close contact with the languages of the Aryan group. A new era was inaugurated in their study by the labours of Gesenius, Ewald, and Olshausen ; and Renan even attempted a "Histoire générale et système comparé des langues sémitiques." But Renan's work remains a splendid fragment; the first part, the "Histoire Générale," has passed through several editions ; but the "Système comparé" has never appeared. It was soon found that the comparative study of the Aryan languages would not give the key to all the problems of speech ; that in fact the Aryan group was an exceptional one, and the laws determined from it, so far from being of universal validity, did not apply even to the dialects of the Semitic family. The endeavour to reduce the Semitic radicals to monosyllabic biliterals, under the belief that Aryan philology

necessitated the existence of monosyllabic roots in all languages, introduced nothing but confusion into the study of the Semitic tongues; and the theory of pronominal suffixes, which seemed to be supported by the phænomena of Aryan speech, has been equally a loss rather than a gain for them. It is at last becoming recognized, however, that each group of languages, as well as each language in the several groups, has its own linguistic laws peculiar to itself, and to apply these to other groups and languages in which they have not been proved to exist, is to do violence to the comparative method itself. The Aryan languages are the languages of a civilized race; the parent-speech to which we may inductively trace them back was spoken by men who stood on a relatively high level of culture, and was as fully developed, as inflectional, in short, as Sanskrit or Latin themselves. Such a speech can tell us far less of the early condition of language than the Bushman dialects of our own day, and to make the conclusions derived from the examination of it of universal validity, or so many revelations of the primitive state of speech, would be a serious error.

The exceptional character of the Aryan group of languages has been made apparent by the application of the method learnt from its investigation to other groups of tongues. The four most important groups which have yet been examined, are the Malay-Polynesian, as explored by W. von Humboldt, Buschmann, Von der Gabelentz, and Friedrich Müller; the Bâ-ntu of Southern Africa, the scientific investigation of which is due to Bleek; the Athapasian and Sonorian of North America, of which Buschmann has been the Bopp; and, above all, the Ural-Altaic,

otherwise called the Ugro-Altaic, or Turanian, which is now, owing to a variety of circumstances, receiving a special attention. The work begun by Castrèn, Schott, Böhtlingk, and Max Müller, has been continued by Boller, Budenz, Donner, Hunfálvy, Ahlqvist, Thomsen, Ujfalvy, Schiefner, and others; and so far, at all events, as the Finnic group is concerned, "Turanian" philology is almost as far advanced as Aryan philology itself. But the limits of the Ural-Altaic family as a whole are still not quite settled; while Dr. Edkins would connect Chinese with Mongol roots, others question the affinity of Mongol itself to the Tatar-Finnic languages, and Weske has even gone so far as to class the Finnic dialects among the inflectional tongues, and to hint at their connection with the languages of the Aryan family. But this is to follow in Bopp's footsteps only when he endeavoured to trace the dialects of Polynesia and Europe to a common source.

The creation of a science of language has brought with it the creation of a science of comparative mythology and a science of comparative religion. Language is at once the expression and the creator of thought, and the history of language is consequently the history of human thought. Now mythology is a record of the way in which primitive man endeavoured to explain the phænomena of nature and his relation to the world, just as religion—that is, religion as crystallized in dogmas and systems—is a record of man's attempt to represent his feelings and belief in relation to a higher power. The record can only be interpreted by the science of language; it is only when we come to understand the meaning of the language of

mythology that we understand the meaning of mythology itself. Just as it was Sanskrit which laid the foundation of comparative philology, so, too, it was the hymns of the Rig-Veda, the oldest monument of Sanskrit literature, which laid the foundation of comparative mythology. The familiar forms and names of Greek myth met the scholar again in the Vedic poems; but their faces were no longer concealed by the veil of forgetfulness. The poets of the Rig-Veda were still conscious of the true nature and origin of Zeus (*Dyaus*) the "bright" sky, or Erinnys (*Saranyu*) "the dawn," and the old stories of the sun-god and the powers of day are lighted up with renewed life and significancy when we track them back to their ancient home in the East. Not less important for the comparative study of religion have been the inquiries into the development of Brahmanism and its struggles with the teaching of Buddha, necessitated by the examination of the classical language and literature of India—inquiries which could be carried on in the dispassionate spirit of the scholar and without reference to the religious convictions of the Western world. The settlement of the exact meaning of a single word like *nirvâna* opens a fresh chapter in the comparative history of religion. It is not the least of Professor Max Müller's services that he has made both these new sciences household words and invested them with a charm which has secured to them the attention they deserve.

In England the scientific study of language has taken a special direction in accordance with the practical character of the nation. Men like A. J. Ellis, Bell, and Sweet, have followed up the path first indicated by Grimm and

Lepsius, and devoted themselves to an exhaustive investigation and analysis of articulate sounds. Aided by Helmholz in Germany, and Prince Lucien Bonaparte in London, they have determined the physical laws of utterance, have classified the most minute varieties of sounds, and pointed out the supreme importance, for phonological purposes, of living dialects. Etymology has to a great extent become a purely physical science: the connection and derivation of words must be traced out in obedience to the physiological laws of speech, and were it not that a sound or group of sounds cannot become a word until a meaning has been put into it, etymology might be described as merely a branch of physiology. But phonology, the science of sounds, is not synonymous with the science of language; it is but a department, a subdivision, of the master science, and deals only with the external, the mechanical, the physical side of speech. The relations of grammar and the inner signification of words and sentences are what constitute the real essence of language, and in so far as these belong to thought and not to the mere vocal organs of the body, the science of language, like the other sciences which have to do with the mind, must be described as a historical and not as a physical science. There has been a tendency among some philologists to push phonology beyond its proper sphere and make it co-extensive with comparative philology: it is this inclination which has lain at the root of the attempt to include the science of language among the physical sciences; but phonology is concerned only with the outward framework of speech, not with its inward essence. This framework, however, it is, by means of which we are

able to investigate language, and the very fact of its being subject to physical laws which admit of no contravention, gives the modern science of language its scientific certainty, and constitutes the difference between it and the old punning etymology in which, as Voltaire said, the consonants counted for nothing and the vowels for very little. Before a single derivation can be admitted it must be shown to be in accordance with the ascertained phonological laws of the languages we are studying; before it can be justified it must satisfy the requirements of sense and history. The outward form is the key to the inward fact which it embodies; we can get at the original force and meaning of grammatical relations and derivative words only by interrogating the phonetic utterances by which they are expressed. The science of phonology is the entrance to the science of language, but we must not forget that it is but the outer vestibule, not the inner shrine itself.

It has been necessary to state thus in detail the distinction between phonology and the science of language as a whole, because a good many of the theories that have been propounded in the name of the science rest upon an unconscious confusion of the two. The outward and the inward have not always been kept apart, and nothing has been commoner than to argue that a change in the pronunciation of a word or suffix has been the *cause* of a change in its meaning. It has even been thought that the phænomena of inflection might all be accounted for by the action of phonetic decay in stripping off the final parts of compound words, and so disguising their primitive form (but not sense),

and that when the comparative philologist has traced a word back to its source in accordance with phonological laws he has done all that is required of him. Even Plato and Aristotle had a higher conception of the study of language than this. No doubt the fact that a scientific treatment of language rests primarily upon phonology has had much to do with this one-sided view of speech, but the resemblance of the method of comparative philology to the method employed by the physical sciences has also been a cause of it. Comparative philology has been regarded as a physical science, language held to be a concrete organism, independent of human volition and with a growth analogous to that of the plant or the animal, and the laws of language explained without reference to the facts of psychology. The two Schlegels are the first who may be accounted responsible for this mode of dealing with language. Friedrich Schlegel divided languages into the flectionless, the agglutinative, and the inflectional, and treated the roots of languages as so many seeds, which grew up and developed like the acorn into the oak. A. W. Schlegel[1] calls the flectional languages "organic, because they contain a living principle of growth and development, and alone have, if I may so express myself, an abundant and luxurious vegetation." In fact, speech was regarded by them as something that exists separately and independently, and the flections of the verb and noun were believed to have sprouted out of the root like so many leaves and branches.

[1] "Observations sur la langue et la littérature provençales," p. 14.

Schlegel's mysticism, as Steinthal terms it, was exposed by Bopp, who threw the languages of the world into three groups: (1) those which, like the Chinese, are "without a grammar;" (2) those which, like the agglutinative and Aryan tongues, start with monosyllabic roots, and, by the help of composition, end with a grammar; and (3), lastly, the Semitic group, which expresses the relations of grammar by internal change. Bopp here commits at least three errors: (1) Chinese is as fully organized, as much possesses a grammar, as English or Latin; (2) the roots neither of the Aryan nor of the agglutinative languages can be proved to be monosyllabic, while the Aryan languages, at all events, sometimes use internal vowel-change to denote grammatical differences; and (3) to imply that the relations of grammar have been called into existence in the Aryan family by the passage of composition (or agglutination) into flection is to ascribe the origin of the relations conceived to exist between the several parts of our thought to the outward accidents of phonetic decay. Bopp naturally looked upon the laws of Aryan philology as holding good for all other branches of human speech; for him the parent Aryan language was the primitive language of mankind, and the verbal and pronominal roots discovered by the Sanskrit grammarians were assumed to have constituted a language, and, in fact, to have been the original language of the human race. Agglutination was but an earlier stage of inflection, and, in fact, was merely the form in which the unorganized primitive speech came to possess a grammar by compounding its roots together. No wonder, therefore, that

roots were confounded with words; that Chinese should be described as consisting of "bare roots;" and that the possibility should be admitted of deriving all languages from a single source. Hence the endeavour to find a place for the Polynesian and Caucasian dialects in the Aryan family, and the stress laid upon the external rather than the internal side of speech. Structure, morphology, comparative syntax—these are ideas which have been left to Bopp's successors to work out. With him language is still an organism, flowing from one source and passing through a series of necessary changes; it is, therefore, not so much a social product as a subject of physical inquiry. This view of language was assailed by Pott. He justly urges that we can only speak of language as an organism metaphorically, and that there is no inner necessity in language to develop like the seed into the tree, or the chrysalis into the butterfly, than there is in thought itself. The roots of language have no existence apart from the mind; before they can become words they must be clothed, now with this form, now with that, according to their relation with other words. Language, in fact, is the expression of thought; it cannot be examined except in connection with thought and the history of the human mind. The science of language, accordingly, is one of the historical or social sciences, and phonology is but the key whereby we read the enigmas of the thought within. Languages will differ according to the different ways in which men have conceived the world and their relation to it. Pott, therefore, is an advocate of the original diversity of languages, and, as might be expected, endeavours to found

a science of sematology, or of the signification of words, by the side of the science of phonology.

Pott had been preceded in his general conception of speech by Wilhelm von Humboldt; indeed, his advance upon Bopp was due in some measure to Humboldt's previous labours. For Pott, it must be remembered, was pre-eminently a phonologist, and to him we owe the extension of the results obtained by Grimm in the Teutonic languages to the whole body of Indo-European tongues. Humboldt, like all other great masters, rather suggested than worked out; and recent researches have shown that the facts to which he attached his philosophical system, such as the nature of the Kawi language of Java, are not always to be trusted. He laid down that each single language is the individual expression of the character of a nation, though language, taken generally, "is an organic whole," from which the individual languages of the world radiate as from a centre. The nearer each language approaches the ideal of language, the more, that is to say, it is free from peculiarities of thought and expression, the less is it imperfect and, in the bad sense of the term, individual. And since a language is the outward expression of the mind and history of a nation, the nation whose language is the most perfect has approached the most nearly to a perfect culture and civilization. Language is at once the most exquisite work of art and the most marvellous creation of science that the spirit and intellect of a people can produce, and its character, as tested by the standard which linguistic science has to establish, is a sure and certain clue to the stage of art and science attained by its speakers. At the same time, Humboldt

emphatically declares that language is not a product (ἔργον), but an activity (ἐνέργεια); in other words, that language and speaking are the same. But while maintaining that language is the creative organ of thought, Humboldt also maintained that it constitutes an independent world of thought, thus confusing the two senses of the word language—the one in which language is made identical with the act of speaking, the other in which it represents the whole body of significant sounds we utter. Humboldt had been educated under the influences of the Kantian philosophy, and in his theory of language we may discover a reflection of Kant's dualism in the opposition he finds in speech between the general and the individual, between language as an organic whole, and individual languages which refuse to answer to the ideal definition of speech.

Steinthal[1] has subjected Humboldt's statements to a very thorough-going criticism, and has exposed their manifold inconsistencies as well as the dualism which underlies them all. Humboldt's philosophy of language erred by following the *à priori* rather than the *à posteriori* method; the facts discovered by comparative philology were used by him as illustrations of his conclusions rather than as the premisses upon which those conclusions were built. Nevertheless, in spite of his *à priori* metaphysical method—in spite of his laying down what language ought to be instead of what it is, Humboldt's genius scattered

[1] "Charakteristik der hauptsächlichsten Typen des Sprachbaues," pp. 20-75. Steinthal's criticism is criticized in turn by Pott in his edition of Humboldt's essay, "Ueber die Verschiedenheiten des menschlichen Sprachbaues" (1876).

ideas and suggestions through his work which have proved abundantly fruitful in the hands of later scholars. But the value of these ideas was due to the far-sightedness of his genius, not to his collection of facts, and he was accordingly unable to harmonize and classify them, or to erect upon them a sound theory of speech. Humboldt's great work consisted in teaching that language is the expression of national thought, that it must be treated as an organic whole; that, in short, its science is a historical and not a physical one.

The work thus begun by Humboldt was taken up by Heyse in his "System der Sprachwissenschaft."[1] Heyse approached language from the point of view of the Hegelian philosophy, but he strives to prevent the *à priori* method from overriding the *à posteriori*. His view of language professes to base itself on the results of comparative philology, although the endeavour to force them into an Hegelian mould is clearly traceable. It really rests, however, upon an *à priori* conception of the origin of speech, which is neither borne out by linguistic facts nor easily realizable. Language, he holds, is spiritualized sound: the world is a great vibratory organ, in which all objects when touched emit a note, and so, too, the human spirit, when affected by feeling or reason, emitted certain sounds peculiar to itself, which we call roots. Speech was as much a necessity to man as ringing is to a piece of brass when struck. It is, in fact, the music of the soul, and its development gauges the spiritual development of its speakers. This development of speech is, therefore, a wholly internal one, depen-

[1] Edited by Steinthal (1856).

dent not upon the outward phonology, but upon the common spirit of man that has created it. The outward sound is but the garment created by thought wherein to clothe itself, but the garment is always suitable to the thought it clothes. Since thought "must" develop, language also "must" do the same, and language, like thought, can develop only in a particular way. This evolution necessarily depends upon the existence of minds in which thought has become self-conscious, reflective: "the speaking of children and of the great mass of mankind is a lifelong, unconscious activity—a mere natural activity of conscious thought." Such a theory of language is plainly mystical. On the one hand, the natural sounds uttered by a man under strong excitement do not constitute language, but rather a barren list of interjections; on the other hand, to speak of the soul, or mind, being affected like ordinary objects of the sense, and accordingly emitting sounds, is sheer mythology. Moreover, the evolution of speech, of which Heyse speaks, is not a *necessary* one: there is no necessity "in the very essence of human speech" that the various forms of language—isolating, agglutinative, inflectional—should have come into existence. Language originated in the very prosaic and unphilosophical need of intercommunication, without which no community was possible, and so long as this need could be supplied, the nature and perfecting of the means was not even considered. The linguistic garment of thought, it is true, generally (though by no means always) fits the thought it clothes fairly well, but only because the garment itself is to a great ex-

tent identical with the thought which it envelopes. To deny that language properly so called exists for children and uneducated persons, as Heyse finds himself forced to do, is to deny that it was framed by primitive man, which is, indeed, a *reductio ad absurdum*. Heyse's chief merit lies in emphasizing the fact that language is not the work of the individual, but of the whole community, and of a community, too, which consists of reasonable, thinking beings.

Steinthal is the modern representative of the school of W. von Humboldt. Language, he holds, is an activity, an ἐνέργεια, everlastingly "becoming." It has "broken forth" necessarily from the human mind when the conditions for its production were present, and in order, therefore, to discover the origin and nature of language, we must know the mental condition which preceded its creation. It originated through the unconscious action of psychological laws, without being willed into existence. The same instinctive laws still operate when a child is learning to speak: the learning is not a conscious effort, and in the very act of learning speech is being created anew. But these laws will only operate in a community, the first condition for the "birth" of language being that men should be united together in a common society. Hence the need of a psychological ethnology which should deal with the psychological phænomena, not of the individual, but of the race. This alone will enable us to penetrate to that "inner form of language" which Humboldt failed to recognize, but which constitutes language in a far more real sense than phonology can ever do. This inner form of language is neither

more nor less than "apperception," or a perception of the relations between allied apprehensions, and is also described by Lazarus as a "condensation of thought."

Steinthal's writings have proved as suggestive to other scholars as those of Humboldt, but their effect is marred by a want of clearness, as well as by an exaggerated use of the *à priori* method. In opposing the tendency to make phonology synonymous with the science of language, Steinthal goes much too far on the opposite side. Instead of using psychology to control the conclusions of comparative philology, he deduces philological conclusions from assumed psychological facts. Not psychology, but comparative philology, can lead us to the first beginnings of language, and raise the veil that covers its origin. The error, however, which lies at the bottom of Steinthal's reasonings is, as in the case of Heyse, the ambiguous use of the term language. Speaking, but not language, may be described as an activity. So, too, the faculty of speech may be said to be instinctive, which language certainly cannot be. To assert that a child learns to speak without conscious effort depends again upon an ambiguous use of the word conscious: as a matter of fact the child learns to speak in much the same way as the adult learns a foreign language. Nor is it more than a questionable metaphor to speak of language as "breaking forth" or being "born." Primitive man framed his earliest speech with labour and difficulty; no doubt certain mental and physical conditions were pre-supposed by the process, but no amount of psychological, even when conjoined with physiological, study will tell us what these were: in order to discover them we must

question the records of speech itself. Steinthal has been misled, like his predecessors, by a false conception of the roots of language: he has pictured them to himself as so many mental germs thrown off spontaneously by the mind, and forthwith forming a language; and since these germs have a verbal signification in the Aryan family of speech, he has further identified them with the concepts of the mind. But roots are not words, and words are not concepts.

Opposed to Steinthal is the school which groups the science of language with the physical sciences, and of which Schleicher, with his modern follower, Hovelacque, may be considered the representative. It may be traced back to Bopp and Grimm, the one with his microscopic analysis of the suffixes and belief in the mechanical origin of inflection out of a previous composition of independent words, and the other with his engrossing regard for phonology and adherence to Bopp's theory of a primitive language of roots. Jacob Grimm's views may be best gathered from his treatise "Ueber den Ursprung der Sprache" (1851).[1] In this he begins by comparing the science of language with the investigation of natural history, the attempt to discover the origin of speech being analogous to that of discovering the laws of the production of animals or the growth of plants. Like Goethe, Grimm inclines to believe that mankind started from several separate pairs: at all events, the distinction of gender in the noun implies the influence of the female sex. Language has passed through three different stages, the last being the analytic, the middle the inflectional, and the earliest that of the de-

[1] Translated into French by F. de Wegmann (1859).

termination and composition of monosyllabic roots. It is a purely human work, "emanating immediately from human thought," and, as such, the key to all human history. The first words, which are identified with Aryan roots, were invented by a sort of "wonderful instinct." The several vowels and consonants have each a particular force and significancy, *l*, for instance, expressing softness, *r* roughness, and in settling what vowel or consonant should be taken to denote some special verbal idea, the "inventor" of speech had for the most part to consult his own "arbitrary choice." Language, in short, is a human invention, determined by the natural significance of different articulate sounds; its growth means the composition and decay of these various sounds. In order to discover what it is, we have only to investigate the history of this composition and decay—that is, the nature and history of phonology. It is no wonder, therefore, that Grimm started by comparing the comparative philologist to the student of natural history, and imagined that the phænomena of all human speech could be learned from the examination of the Aryan family. It is needless to point out the unverified assumption which underlies the notion that each articulate sound has a particular significancy, or the inconsistency of this view with the admission of human volition in the first invention of verbs. Grimm's attempt to discover the origin of language was a failure; it amounted to stating that roots have a particular meaning because that meaning is "natural" to them, and where this tautological explanation seemed insufficient, to introducing human caprice. But human caprice in the case

of the origin of language stands on the same footing as the old theory of a social contract. It was all very well for one primæval man to determine that a particular sound should represent a particular verbal notion, but how was he to communicate the fact to his neighbours?

Grimm, however, merely prepared the way for Schleicher. In the three works in which he most clearly sets forth his views on the nature and origin of language,[1] Schleicher affirms that language is a natural organism possessed of a separate existence, and as little subject to the will of the individual as the power of changing its song to the will of the nightingale. The growth and decay of language is in accordance with fixed immutable laws. Its existence as an organism is due to its being the audible manifestation or symptom of certain material relations in the constitution of the brain and vocal organs, and is consequently determined solely by those external conditions of climate, food, inherited instincts, and the like, which influence our nervous and muscular system. History and the science of language have nothing to do with one another. Like the phænomena of chemistry or physiology, the phænomena of language must be regarded as so many material facts which can only be the subject-matter of a physical science. The science of language, in short, is neither more nor less than phonology; the signification of words is either incapable of scientific

[1] "Die Darwinische Theorie und die Sprachwissenschaft," 1863 (translated into French in the first part of the "Collection Philologique," 1868, and into English by Bikkers, 1869); "Ueber die Bedeutung der Sprache für die Naturgeschichte des Menschen" (1865), and "Die Deutsche Sprache" (second edition, 1869).

treatment, or else, like their pronunciation, a mere result of determinable nervous action. The language we speak is conditioned by our bodily organization and antecedents. An European can only become a real master of Chinese by ceasing to be an European and becoming, mentally and physically, a Chinaman. Language, being in no way subject to human volition, follows its own necessary laws of growth and development. The inflectional tongues have grown out of the agglutinative, the agglutinative out of the isolating, and the isolating are to be identified with that primæval language of roots which is reached by analysis in the Aryan group. The acquisition of this root-language created man; the primates, who were less favoured by circumstances than their brethren, and consequently did not develop speech, fell back into the condition of anthropoid apes. Hence the importance of the science of language for the Darwinian theory. Not only do we see language developing by slow degrees from the simple to the complex by the aid of natural selection, but it is through language alone that man is separated from the brute; so that before the beginning of language—a beginning which linguistic science can demonstrate with certainty—man was in no way distinguishable from the other primates. Language thus becomes the most important, it may be said the sole, test of race and lineage. The Ethiopian can change his skin sooner than his mother-tongue. The languages of the world cannot be carried back to a single source. There are at least as many original languages as existing families of speech. The resemblances detected between them are due to geographical position; the nearer they

were to one another at the outset, the more the speakers were subjected to the same external influences, the greater will be their similarity. A time comes when the creation of languages ceases, and is replaced by the entrance of a race into history. It is before this period, therefore, that the external influences, the geographical conditions, will have to act.

Schleicher's views, it will be seen, are based on the false assumption that language is an actual entity existing apart from the minds and the mouths of its speakers. In the course of his argument he found himself forced to adopt a position somewhat inconsistent with this assumption. If language is a symptom of the brain and vocal organs, it can hardly be described as an independent organism. In so far as phonology is concerned,—that part of language, namely, which depends on the vocal organs,—the physiological laws which determine it can be ascertained in the same way and with the same certainty as the other laws of physiology; but mere phonetic sounds do not become language until they embody a signification; and though it may be quite true that every act of thought is preceded by a change in the molecules of the brain, yet this change is altogether unknown to us, and our only way of discovering the laws and principles of language is by questioning language itself, not by investigating the alterations undergone by the material of the brain. The morphologic facts of language must be studied in the same way as the facts of sociology, of psychology, or of any other science that has to do with the mind. The science of language, taken as a whole, cannot be counted among the physical sciences.

To identify it with phonology is to identify the whole with its part. Unless we treat language historically, its study becomes little more than a dry enumeration of the several languages of the globe and their distinctive peculiarities. Not being an independent entity, it cannot follow necessary laws of its own. The laws of its life and growth are really the laws which govern the action of society in a particular direction. To speak of the impossibility of thoroughly mastering a foreign language is absurd. The same difficulty a member of one community finds in transforming himself into a member of another community recurs in the case of language, but the fact that an English child born in India will speak Hindustani as his native tongue, is sufficient to show that the power of speaking a special language does not depend on a special organization and ancestry. Language is the creation of society. An individual speaks a certain language because he belongs to a certain society. As we shall see hereafter, language is no test of race, only of social contact. As for the primæval root-language, we have no proof that it ever existed, and to confound it with a modern isolating language is simply erroneous. Equally unproved is the belief that isolating dialects develop into agglutinative, and agglutinative into inflectional. At all events, the continued existence of isolating tongues like the Chinese, or of agglutinative tongues like the Magyár and Turkish, shows that the development is not a *necessary* one. Not less difficult to prove is the fancy that there are two periods in the life of speech—one in which men are giving themselves up to the production of language, the other when they are creating history. There is merely an ana-

logy between the action of natural selection in language and natural selection in the organic world. The science of language can tell us nothing of the descent of man. Man, it is true, is man in virtue of language; but, on the other hand, he must have been man to create language.

Bréal, the leading French philologist, gave at one time a qualified approval to the essential part of Schleicher's theories, and their chief advocate at present is another French scholar, Abel Hovelacque. He has availed himself of Broca's investigations, according to which the organ of language must be placed in the left (more rarely the right) cerebral hemisphere in the posterior half of the third frontal convolution. Hovelacque's work on the science of language [1] exhibits the defects of Schleicher's theory of language, as it contains little more than a catalogue of the various families of speech with their distinguishing characteristics. The physical theory of language allows for little more than what may be called a natural history treatment of it; the action of emphasis and analogy, of phonetic decay and dialectic growth, and all the other questions involved in a morphologic and historical treatment of speech are necessarily ignored. Faidherbe, another French follower of Schleicher, endeavours to bridge over the gulf between man and the ape by pointing on the one side to the inarticulate clicks of the Bushman, and on the other to the six different sounds uttered by the *cebus azaræ* of Paraguay when excited, which arouse corresponding emotions

[1] Translated into English by Keane for the "Library of Contemporary Science" (1877).

in other members of the same species.[1] Bleek[2] with Häckel's help had already traced the utterances of speech to the cries of the anthropoid apes, and laid down that articulate language is distinguished from inarticulate by being broken up and mobilized. The germ of the suggestion was given by Steinthal, who first pointed out that language approaches its ideal the more analytic it is; sounds, like ideas, become articulate when they cease to be indefinite and indistinct. Bleek holds that the imitation of instinctive sounds made by others to express certain emotions first reminded the earliest men of the same feelings in themselves which had prompted them to the same kinds of utterance, and so led them to compare and distinguish the feeling and its vocal sign, the outward utterance and the inward signification. Language is thus of interjectional origin, helped by the imitative instinct, and language in the course of its development created and moulded thought.

Like Bréal, Max Müller inclines to regard the science of language as a physical rather than as a historical one, and would compare it with geology so far as its method is concerned. He, too, holds that language is the creator of conceptual thought; without the word, without the bond or memorandum which is to keep our individual impressions together, a general idea, and consequently reasoned thought, would have been impossible. Apart from inherited instincts, the deaf-mute, like the

[1] "Essai sur la Langue Poul" in the "Revue de Linguistique" (Jan. et Avr. 1875).

[2] "Ursprung der Sprache," with a preface by Häckel. Translated by T. Davidson (1869).

infant, has only the capability for thought so long as he is unprovided with a language of some sort. No theory, whether onomatopœic or interjectional or otherwise, which has attempted to explain the origin of language has succeeded in its task; for language is environed on all sides by the barrier of roots, and in roots alone we must seek its origin. How these roots may themselves have originated we do not know; probably onomatopœia and the reflex action of sounds excited by a common action had much to do with it; but the science of human speech is concerned only with the question of the origin of language, not with that of the origin of roots. The roots, however, once constituted a real language which may be compared with the Chinese of to-day, and which in certain instances passed through an agglutinative into an inflectional stage of development. The roots were, for the most part, not monosyllabic; whether there was one common stock of roots at the beginning, or an indefinite number of stocks, we have no means of determining. What we know is that dialects precede languages, that out of the many comes the one, and that in the drifting desert of human speech, only three or four families like the Aryan, the Semitic, or the Ugro-Altaic, have been able to establish themselves. At the bottom of Max Müller's theory of language seems to lie the philosophic postulate that the universal precedes the particular; the roots of language are so many "phonetic types," so many universals, out of which the manifold forms and words of living speech have been developed. They constitute the background of those concepts whereon the structure of thought has been

reared. With the mythopœic epoch of speech all was changed. Then the particular came to precede and create the universal, and out of individual words which had lost their original meaning were built up the myths of Greece and Rome. In each case the process was an unconscious one; the will of the single man can no more change the tendencies and growth of language than it can change the force of the winds. Max Müller thus stands midway between Schleicher and Steinthal.

Side by side with the school of Schleicher there has sprung from the doctrines of Bopp what may be termed the common-sense school of philologists. As perhaps is natural, it is mainly in practical America and England that the school has found its adherents, among whom Whitney may be considered its most prominent representative. He states the theories (as opposed to the method and philological facts) of Bopp in their clearest and most extreme form, and does not shrink from carrying them out to their logical conclusions. Thus it is affirmed that the first men spoke in monosyllabic roots, which by means of composition passed into an agglutinative form of speech, and that again, in a similar way, into inflection. All flection may be analyzed into a preceding agglutination, and all agglutination into a preceding juxtaposition of roots, the latter being both predicative and pronominal. Whitney holds that language is an institution like government, and that it is absolutely dependent on the human will, determined only by the necessities of society. The phonetic forms and meanings of words are assigned to them by the conscious or unconscious action of a community. Language is, in all strictness, a human inven-

tion, in which onomatopœia probably played a large part. Its science consequently will be a historical one. Thought is prior to language; language therefore did not create thought, nor can it be treated as a separate organism existing apart from its speakers. The origin of language is explained very simply by the need of intercommunication between those who first used it, and since it is always the expression and sign of thought, we may call them, with perfect accuracy, its inventors. Just as thought which is universal precedes language, so a single parent-speech precedes dialects.

Whitney's views, however, require too many still unproved assumptions to be received as ascertained truths; the existence of a parent-speech, for instance, being as hypothetical as the transition of one form of speech into another. Too little regard also is paid to the physiological side of language, that side which connects it with the physical sciences; while too much influence is assigned to the human will in its formation. It cannot with any real strictness be termed an institution, because an institution has often been founded or changed by an individual, and over language the individual has no such power. Whitney attributes too much design, too much volition, to the formation of speech; the need of intercommunication alone will not explain its origin, since we may ask, How did this need arise, and how were the means of supplying it communicated? However much language may now be defined as the expression of thought, it was not so at first, when conceptual thought was made possible only by the help of language; and even now language is rather the embodiment, however imperfect, than the

sign of thought. The stress, moreover, laid upon the element of volition in the production of speech is inconsistent with the idea that mere juxtaposition and phonetic decay could have effected that change in the way of viewing things and their relations which is involved in the transition from one form of speech to the other.

The problem of the origin of language was taken up from a wholly different point of view by Lazarus Geiger.[1] He traced it to the instinct of imitation so deeply implanted in the nature of man. The expression of feeling, of pain and pleasure, of anger and love was indicated partly by corresponding cries, partly by the muscular movements of the face, which might or might not accompany them. The imitation of these movements on the part of a second person caused a particular gesture and the cry that accompanied it to be associated with the idea of passion, pleasure, or pain that had given rise to it. Gradually the gesture was merged in the cry, and the cry was changed into a root or word. Each root was, therefore, at the outset, an embodiment and symbol of an action. Hence it is that the roots to which language can be traced back are all verbal, all expressive of movement and action. Since the publication of Geiger's book, the whole subject of the "Expression of the Emotions in Men and Animals" has been elaborately worked out by Mr. Darwin in a special work, while Benfey has independently pointed out how large an influence the physical accessories of speech must have originally had in putting

[1] "Ursprung und Entwickelung der menschlichen Sprache und Vernunft" (1869).

sense and significancy into the sounds associated with them.[1] Looks, gestures, and the modulation of the voice are common to man and the lower animals, but whereas the import of looks and the modulation of the voice agrees all over the world, that of gestures does so only in part. How, then, could gestures have the same unambiguous meaning for others which Geiger's theory would demand? The answer is given by Ludwig Noiré, who takes up and completes the theory of his master. The weak point in the latter is that it makes language, which is essentially a social product, the creation of the individual. Noiré, in a volume at once singularly lucid and suggestive,[2] successfully meets the difficulty. He recalls the rhythmical cries or sounds which a body of men will make when engaged in a common work, and which seem the product of a common impulse. We are all familiar with the cries of sailors when hauling a rope or pulling the oar; with the shout of the Eastern vintagers as they beat time in the wine-press; or with the yell of savages when they attack a foe. In such cries and shouts as these Noiré would discover the beginnings of speech. They seemed called forth by the work in which men

[1] See also Benfey's article, "Einige Worte über den Ursprung der Sprache," in the "Nachrichten von der k. Gesellschaft der Wissensch. zu Göttingen," Jan. 30, 1878. Benfey here points out that just as we share a capacity of walking with the lower animals, so also do we share with them a capacity for communicating with one another by the help of a language of some sort. And he remarks pertinently that it was not harder for the first men to understand the meaning of what was said to them than it is for domestic animals nowadays to learn the meaning of the words and phrases we use in speaking to them or giving them orders.

[2] "Der Ursprung der Sprache" (1877).

were engaged for a common purpose, and so became to them the expression and symbol of it. Once established as intelligible symbols, they constituted those roots which are at once the earliest form of language and the germs out of which all future language has grown. Hence it is that roots denote actions and not objects; hence, too, the fact that the sense of sight must be regarded as the first stepping-stone to speech. Like Geiger, Noiré is a philosopher rather than a philologist, and his explanation of Aryan roots and their connection with one another frequently contravenes the laws of scientific etymology. Nor can his identification of roots and words be admitted, or the actual existence at any time of the hypothetical roots of the Aryan tongues. But his theory doubtless explains the origin of much that is in speech, though it does not explain everything. Onomatopœia is not excluded from sharing in the creation of language, nor can we refuse to recognize the interjectional source of certain roots and words. But even if it will not solve the whole problem, Noiré's theory clears up the origin of that part of speech which has hitherto appeared hardest to explain. Like the song of the birds, the language of man, too, is instinctive and necessary, called forth by a sense of life and energy, by a common participation in a common work.

Outside the school of Bopp stands a group of scholars of whom the best known are Scherer, Westphal, and Ludwig. They agree in rejecting Bopp's analysis of Aryan grammar and his derivation of flection from a previous agglutination. Grammatical analysis has doubtless been pushed much too far both by Bopp and by his pupils,

and the protest raised against it, although needlessly indiscriminating, has done considerable good. Westphal has recourse to the old trappings of pre-scientific philology, pleonastic letters, apocope, and so forth, and lays down common "logical categories" of flection for both the Aryan and the Semitic families.[1] He defines language as "the embodiment of the content of the human consciousness," and holds that its object is to reduce the individualism of nature to a unity of conception. What is given as separate and individual is unified by thought and language, and the development of language is in accordance with this process of unification. The process, or "movement," of consciousness finds its expression in the corresponding movement of speech; just as thought sums up the individual parts of any perception under a single concept, so language sums up the individual parts of phonetic utterance under the sentence. The result of this movement is the evolution of the verb and the completion of organized speech. Sound and concept are brought together by the common element of "movement," a curious return to the κίνησις of Aristotle. It is evident, however, that Westphal rather restates the phænomena of language in metaphysical language than really explains them, while his entire rejection of Bopp's method and results makes criticism difficult.

Ludwig, like Westphal, rejects the current theory of flection, but substitutes for it another which can not only be supported by facts, but is also not inconsistent with the method founded by Bopp. Flection, he believes, is

[1] See his "Vergleichende Grammatik der indo-germanischen Sprachen" (1873), I. Appendix, pp. 56-98.

the result not of agglutination, but of adaptation, certain unmeaning terminations of existing words being selected to express new grammatical relations when they first dawned upon the mind.[1] Ludwig's view seems to have met with partial acceptance among some of the younger French philologists, and it is supported by Bergaigne's researches into the nature of the case-suffixes.[2] The analysis of the latter has always been a stumbling-block in the way of the current theory; Bergaigne has made it clear that they were either the terminations of abstract nouns or else suffixes which have been adapted in different words to the expression of very different meanings. On the other hand, Ludwig's theory fails when applied to the verb, and we still need an explanation of the manner in which the same select number of meaningless terminations came to be attached to so large a variety of words. But the advocates of the agglutination hypothesis have the same difficulty to contend against when they deal with the stem-suffixes.

In pursuance of Bopp's method, but independently of the distinctive theories of his school, Waitz, the anthropologist, has propounded a new theory of language.[3] As we do not think in words, but in sentences, and as language is the expression and embodiment of thought, it is clear that the unit of language must be the sentence and not the word. The words which compose a sentence are related to one another in the same way as the several elements of an idea, or of an action as reproduced in

[1] "Agglutination oder Adaptation" (1873).
[2] "Mémoires de la Société de Linguistique de Paris," ii. 5.
[3] "Anthropologie der Naturvölker," i. p. 272.

thought, and can only be decomposed and separated by conscious analysis. Consequently the incorporating languages of America, in which an individual action is represented by a single sentence pronounced as one word, are a survival of the primitive condition of language everywhere. It is only gradually that the different parts of speech are distinguished in the sentence, and words formed by breaking up its co-ordinated elements into separate and independent wholes. Originally words could as little be used alone and without relation as our own suffixes *ly* or *ness*. The agglutinative tongues in which the subordinate parts of a sentence are brought into duly dependent relation to the principal concept are more highly advanced than the inflectional, the "fundamental idea of which is that the principal and the subordinate elements of thought (*Vorstellung*) remain independent and separate, and never coalesce into a single word." This principle of flection, however, can never be logically carried out, since the relations of the central idea expressed by the suffixes are themselves a kind of subordinate conception; if *amatis* is right where the personal pronoun is treated as a suffix, then *amator bonus*, where the attribute *bonus* is regarded as a subordinate, and therefore separate, conception, must be wrong. An isolating language like the Chinese stands on the highest level of development, since here the sentence has been thoroughly analyzed and each member of it rendered clear and distinct, their relations to one another being determined by position alone. Chinese therefore has given concrete expression in language to the philosophic analysis of ideas. Waitz's view would

harmonize with the antiquity and civilization of Chinese much better than the ordinary one, as well as with its resemblance to English and other modern analytical languages; and it is to be noticed that Steinthal, when speaking of Chinese, describes it as a language in which the real words are the sentences or groups of subordinated vocables. Waitz's theory of speech is the theory of an anthropologist who, as the student of the master-science, is better able to decide upon the origin of language than the comparative philologist with whom the existence of language has to be assumed. No science can of itself discover the genesis of its subject-matter. Friedrich Müller attaches himself to Waitz when he says:[1] "We disagree with Schleicher and his school in this one point, that the individual independent word is not the unity for us that it is for him, but rather the sentence—the shortest expression of thought." As he goes on to observe, only the context—that is, the whole sentence—can determine whether *musas*, for example, is to be taken as the accusative plural of a noun or, like *amas*, the second person singular of a verb.

Philological opinion is therefore seen to be still divided upon certain points. But such division of opinion is a healthy sign of life and progress in the new science. It is only by the conflict and discussion of theories that truth can finally be reached, and the many controversies excited by the science of language show how broadly and deeply the foundations of the science are being laid. On the phonological side the progress has been greatest and most certain; morphology and the investigation of roots

[1] "Grundriss der Sprachwissenschaft," I. i. p. 49 (1876).

still lag behind; comparative syntax is but beginning to be handled; and sematology, the science of meanings, has hardly been touched. But the method inaugurated by Bopp remains unshaken, the main conclusions he arrived at hold their ground, and the existence of the Aryan family of speech, with all its consequences, is one of the facts permanently acquired for science. True, there are many questions still to be settled. It is still disputed whether the science of language is a historical or a physical one; whether language is an independent organism obeying fixed and necessary laws of its own or an "institution" controlable by the will of man; whether phonology is to exclude all other departments of the science when the nature of the latter is discussed; whether roots ever constituted a real language or are merely the ultimate elements into which words may be decomposed; whether the flectional stage of language springs from the agglutinative, and this again from the isolating; whether the languages of the world are the selected residuum of infinite attempts at speech or have flowed from one or two common sources; whether dialects precede languages or languages dialects; whether conceptual thought has created language or language has created conceptual thought; whether, finally, the word or the sentence is the true unit of speech. But with all this diversity of opinion there is a yet greater unanimity. There is no scientific philologist who doubts the indispensable value of phonology and the absolute strictness of its laws; who questions the axiom that roots are the ultimate elements of articulate speech, the barrier between man and brute, and that no etymology is

worth anything which does not repose upon them ; who would compare the words of one family of speech with the words of another in the easy-going fashion of a præ-scientific age ; or who would shut his eyes to the light already shed on the history of the human mind and the riddle of mythology by the study of the records of speech. Language is the reflexion of the thoughts and beliefs of communities from their earliest days ; and by tracing its changes and its fortunes, by discovering the origin and history of words and their meanings, we can read those thoughts and beliefs with greater certainty and minuteness than had they been traced by the pen of the historian, or even if

> " Supera bellum Thebanum et funera Troiæ
> . . . alias alii quoque res cecinere poetæ."

## CHAPTER II.

### THE NATURE AND SCIENCE OF LANGUAGE.

"It is a law universally illustrated by organizations of every kind, that, in proportion as there is to be efficiency, there must be specialization, both of structure and function—specialization which, of necessity, implies accompanying limitation."—HERBERT SPENCER.

THE review given in the preceding chapter of the opinions held by others on language and its science or philosophy will have prepared the way for an independent inquiry into the nature and objects of linguistic science. Before, however, we can discuss the limits and character of the science we must have a clear idea of the subject-matter with which it deals. Most of us, no doubt, have a rough-and-ready definition to give of language; but science requires something more than rough-and-ready definitions, and the discordant views as to the scope and meaning of the science of language which have come before us in the foregoing pages are plain evidence that an accurate definition of language is not so easy as would at first sight appear.

Provisionally, however, we may define language as *consisting of certain modulations of the voice, variously combined and arranged, which serve as symbols for the thoughts or feelings we wish to express.* The sounds that we utter must have a *meaning* before they can become language, otherwise they will be mere cries or gibberish, less worthy

of the name of language than even the howling of the dog upon the prairie or the wild song of the forest-bird. Language is the outward expression and embodiment of thought—the garment, so to speak, with which the mind clothes itself when it would reveal itself to another or even, it may be, to itself. The words of a foreign tongue form a language only for those who understand what they signify: for those who do not they are but empty sounds, the idle murmur of a "barbarous" jargon. "The language of birds" was discovered to the Eastern sage alone: to all others the notes of the nightingale and the thrush were as the plashing of the waterfall and the drowsy humming of the bees. "Lessons in running brooks" may indeed be read by the mind, but it is the mind itself that puts them there, and only in so far as it creates a meaning for them does it create also the language in which they speak.

It is evident that our thoughts could be represented by other symbols than sounds. The first and most familiar instance that rises to our minds is writing, though writing symbolizes thoughts only indirectly, its immediate office being to symbolize sounds. There is a written language because there is previously a spoken language, and those who learn foreign tongues know well how detrimental the power of reading a language is when we wish to speak it: the language of the eye has to be translated into the language of the ear. Language can only be symbolized directly to the eye by hieroglyphics; but if our communication with one another depended upon hieroglyphic writing it would never be very extensive or progressive. To say nothing of its requiring

time, writing materials, and skill in drawing, hieroglyphic writing can indicate objects alone with that clearness and certainty which language demands. It is hardly possible to represent in this way abstract ideas, verbs, or adjectives, so that what is denoted shall be recognized by another without previous instruction. Apart from these drawbacks, however, picture-writing has this advantage over spoken language, that its symbols are not mere arbitrary signs like sounds, but intelligible all the world over; and even the degenerated picture-writing of China, by preserving everywhere the same character for the same idea, has kept up a unity and spread a culture throughout the empire which would otherwise have been impossible among a people divided into many and diverse dialects.

Another means of symbolizing thought is "mathematical language," which represents the calculations of the mathematician by written symbols such as 1, 2, 3, $x$, $y$, $z$. But such symbols are of late invention, and could not well be applied to express the daily concerns of life. Quite different is gesture-language, whereby our thoughts and emotions are represented by movements of the hands and other parts of the body. Most of our common needs could be expressed in this way, though gestures would be quite inadequate to represent the wants of a civilized community. Only such ideas as "I am hungry," "let me drink," "it is pleasant," could be denoted by them. But, like picture-writing, gestures possess the great advantage of standing for the same ideas everywhere and among all men. The expression of pain or surprise, the threatening shake of the hand, the pointing of the finger, have the same message for the Negro as for the European. The

traveller in a strange and unknown region is thrown back upon the language of gesture. Burton,[1] perhaps, exaggerates when he says that the Arapahos of North America, "who possess a scanty vocabulary, can hardly converse with one another in the dark," and another reason may be given for this preference for the light; but the importance of gesture-language where other means of communication are wanting is too evident to need examples. Thus Fisher[2] tells us that the Comanches and neighbouring tribes have "a language of signs, by which all Indians and traders can understand one another; and they always make these signs when communicating among themselves." To the same effect James[3] writes of the Kiawa-Kashaia Indians: "These nations, although constantly associating together and united under the influence of the Bear-Tooth, are yet totally ignorant of each other's language, insomuch that it was no uncommon occurrence to see two individuals of different nations sitting upon the ground, and conversing freely by means of the language of signs. In the art of thus conveying their ideas they were thorough adepts; and their manual display was only interrupted at remote intervals by a smile, or by the auxiliary of an articulated word of the language *e.* the Crow Indians, which to a very limited extent passes current among them." Gesture-language is instinctive—the heritage, it may be, of the days before man acquired articulate language, or differed thus far from the brute beast: certain ideas call forth certain corresponding ges-

[1] "City of the Saints," p. 151.
[2] "Trans. Eth. Soc." (1869), i. p. 283.
[3] "Expedition to the Rocky Mountains," iii. p. 52.

tures, and we are not obliged to learn what gestures stand for particular ideas. Hence it is that even now spoken language is so largely accompanied by gesture. An excited speaker is likely to make much use of his hands; and we can often tell what a person is saying to us, though we do not hear him distinctly, by watching the play of his features. We know from the appearance of his face whether he is asking a question, whether he is angry, or whether he is dispirited. With the cultivation of articulate speech and confidence in the use of it, men become more phlegmatic in speaking, less inclined to have recourse to subsidiary helps. It is the awkward country girl whose "manners" have "not that repose which stamps the caste of Vere de Vere." The preacher who addresses an audience of barristers does well to dispense with the gesticulation which is necessary to the mob-orator. According to M. Antoine d'Abbadie, an Abyssinian Galla marks the punctuation of his speech by the help of a leathern whip, a slight stroke denoting a comma, a harder one a semicolon, a still harder one a full stop, while a note of admiration is represented by a furious cut through the air.[1] Even in this country, we have not to go far to find gesture-language employed in default of spoken language. Where the new system of observing the movements of the lips has not been introduced, the deaf and dumb can communicate with the outer world only by the help of gestures, though the gesture-language of the deaf and dumb, like phonetic writing, implies a previous spoken lauguage. It is, therefore, to the instinctive gesture-lan-

[1] Sayce: "Principles of Comparative Philology" (second edition), p. 26.

guage of the North American Indians what our system of writing is to hieroglyphics.

It will be noticed that under the general term of "gesture-language" we have included not only gesticulation, but also that play of feature and modulation of the voice which outlast gesticulation among a civilized people. Gesticulation can hardly form a universal language in the same way that play of feature and modulation of the voice can. Only in part have such gestures the same meaning for all men, and so serve to bridge over the gulf that divides articulate from inarticulate speech. Like play of feature and modulation of the voice, they are common to men and animals; but, unlike the latter, they are capable of receiving an arbitrary and conventional meaning. Helvétius, following in the track of Anaxagoras, asserted that we have become men through the possession of hands; had our arms terminated in a horse's hoof, for instance, we should have been like the beasts that perish, wanderers and defenceless.[1] Indeed, it is quite conceivable that our forefathers would have remained contented with a gesture-language, had not the hands been wanted for other purposes. Food could not be prepared without them, whereas it was not until the desire of food was satisfied that the mouth was put to another use than that of asking for it.

Still the arbitrary element in gesture-language is very small compared with what it is in spoken language. Here beyond a few interjections, or possibly a few onoma-

[1] "De l'Esprit," i. p. 2. Aristotle attacks Anaxagoras for holding *διὰ τὸ χεῖρας ἔχειν, φρονιμώτατον εἶναι τῶν ζώων τὸν ἄνθρωπον* ("De Part. Animal.," iv. 10).

topœic sounds, the whole body of symbols that stand for thought is purely conventional. The same combination of sounds may be used to denote very different ideas. There is no necessary connection between an idea and a word that represents it. It is as arbitrary as our making the sign 1 symbolize the idea of unity or the sign = the idea of equivalence. However well we may be acquainted with our own language, a foreign one will be wholly unintelligible to us until we have learnt it. Even natural sounds strike the ear of different individuals and nations in a totally different way. Exactly the same sound was intended to be reproduced in the "*bilbit* amphora" of Nævius,[1] the "*glut glut* murmurat unda sonans" of the Latin Anthology[2] and the *puls* of Varro; nay, as Dr. Farrar points out, even in the κόγξ and the βρώψ of the Greeks. The Persian *bulbul* has but little resemblance to the *jugjug* of Gascoigne, or the *whitwhit* of other writers; and yet all are attempts at imitating the note of the nightingale. The first word uttered by the children on whom Psammitikhus is said to have tried his famous experiment seemed to their keepers to be βέκ[ος], whereas we read in the great Papyrus Ebers, the standard work on Egyptian medicine compiled in the sixteenth century B.C., that if "a child on the day of birth . . . says *ni*, it will live; if it says *ba*, it will die." And only the last of these infantile cries bears any likeness to what we are told are the primitive and original utterances of childhood, *ma*, *pa*, and *ta*—utterances, by the way, which are only in part possible to the Mohawks and Hurons, who possess no labials.[3] So

[1] "Festus," p. 28. [2] II. 405, ed. Burm.
[3] Max Müller: "Lectures," ii. p. 179 (8th edition).

arbitrary and conventional must be the meanings we associate with the sounds of articulate speech, and so impossible is it to discover in them any signs of universal currency. There is no reason in the nature of things why the word *book* should represent what we mean when we look at the present volume; it might just as well be denoted by *koob*, or *biblion*, or *liber;* and if we chose we might always so denote it.

But although we might choose to do so, unless we could get other people to do the same, we should find ourselves unintelligible to our neighbours, and talking gibberish instead of a language. For the essential thing about a language is that it should be *an instrument for the communication of our thoughts to others.* There is no good in having symbols for our thoughts unless we wish our thoughts to become known to those about us. He who has no thoughts to communicate, no wants to be supplied, has no need of a language. But such a being, to use the words of Aristotle, is ἢ θηρίον ἢ θεός, "either a beast or a god;" or as we might, perhaps, render it in modern phraseology, either a hermit or an angel. The voiceless Yogi of India, or the Bernardine nun of southern France, is but as a dumb animal, or the hapless deaf-mute who has never been trained. The records of speech themselves testify to our instinctive recognition of the fact. The name *Slave*, for instance, by which so large a body of our Aryan kinsfolk have called themselves, means "the speaker," in opposition to the "dumb" and unintelligible German; just as in Isaiah (xxxiii. 19), the Assyrians are a people "of a stammering tongue, that one cannot understand." *Man*, indeed, comes from the

root *man*, "to think;" but it is thinking for others, for the sake of embodying the thought in spoken utterance. The same root has produced *μάντις*, the "seer;" *Μέντωρ* and *Minerva*, whose counsels are for others, not for themselves; *μηνύω*, to "point out," and *moneo*, to "advise;" *μνή-μη*, "recollection," and *memini*, to "remember," and *mentio*, "the bringing to mind" by mentioning in speech. Even in the Semitic idioms, *zâcâr*, "a man," seems connected with *zâcâr*, "to remember," just as the Latin *mas* is with *μνήμη* and *memini*. Language, in short, is the prerogative of man, distinguishing him from the brute beast, because it is the basis and bond of society. Man is "a social animal" in virtue of language; society could not exist without language any more than language could without society. The two are correlative terms, though it is for the sake of society that language has been formed. It is a social product, springing up with the first community, developing with the increasing needs of culture and civilization, and disappearing when the individual Robinson Crusoe is cast back on the island of primitive isolation.

But though it is a social product, it may also with strict truth be spoken of as growing up. A society never met together to *make* a language. To imagine this would be to revive the theories of the last century, which referred all society and government to a contract entered into by our remote forefathers. We do not call the present volume a *book* because we have made a formal agreement with our neighbours to do so, but because if we called it *biblion* or *liber* we should not be understood by the majority of them. The language which we speak is

the heritage which has come down to us from the past, like the laws by which we are governed, or the habits and customs to which we conform. We represent our idea of a printed work by the word book, because we have been taught to do so by others, and those who taught us had been taught by others, and those again by others. But this process of teaching and learning implies a very slow and gradual change in the language that is being handed down. New words come into use as new objects and ideas have to be named, old words are forgotten, the pronunciation gets altered, and other changes hereafter to be described take place. And so, without any deliberate intention on the part of any individual or individuals, the whole character of a language comes in course of time to be transformed. Now and then, it is true, we can trace the invention of a wholly new word to an individual, like *gas* to the Dutch chemist van Helmont, or *od* force to Baron von Reichenbach; and still oftener of a new derivative like *liberalize*, introduced by the Marquis of Lansdowne, *fatherland* by Isaac Disraeli, *incuriosité* by Montaigne, *urbanité* by Balzac, or *bienfaisance* by the Abbé de Saint Pierre. But such words must be accepted by society, be ratified by the tacit agreement of the whole community, before they can become a part of living speech. Though *gas* has made its way into common use, *blas*, which van Helmont proposed at the same time to describe that property of the heavenly bodies whereby they regulate the changes of time, failed to commend itself to the general sense of the community, and so passed out of sight;[1] and such was also the fate of Balzac's *sériosité*, of Malherbe's

[1] Whitney: "Life and Growth of Language," p. 120.

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*dévouloir*, and of Burke's *literator*. In spite of his 262 works, and the grammars and vocabularies written to explain the jargon employed in them, Caramuel, a famous Spanish bishop of the seventeenth century, was unable to bequeath to posterity a single one of his numerous coinages. The "Cabalistic Grammar," published at Brussels in 1642, and the "Audacious Grammar," printed at Frankfurt twelve years later, remained unread and unknown, a monument of "cabalistic" dreams and "audacious" folly.[1] A paternal government may compel the acceptance of a foreign speech, in place of the familiar mother-tongue, like the rulers of Japan, who were said, a short time ago, to be meditating the substitution of English for the native language under pain of death. But even a government of this kind cannot invent a new grammar and a new dictionary; it can only borrow from others: and if we are to judge from the experiences of certain Oxford colleges where French was similarly enforced in the days of the Plantagenets, and Latin in those of the Commonwealth, the attempt, though backed by all the powers of State and Church, is likely to end in failure. Language must be the unconscious creation of the whole society, and the changes it undergoes must be equally that society's unconscious work.

Now the sum of knowledge possessed by a society increases the longer the society exists and the more civilized it becomes. This increase of knowledge is reflected in the language; and hence languages grow fuller and richer—more developed, as it is termed—the longer they last. The further back we can trace a language, the poorer it

[1] See I. Disraeli: "Curiosities of Literature," vol. iii. pp. 79, 80.

is seen to be. Not only are words, or rather derivatives and compounds, wanting, but the words that exist embody but a few out of the many meanings which afterwards cluster around them. The dictionary of the Anglo-Saxon, of the Ormulum, or even of Chaucer, is scant and meagre compared with that at the disposal of a modern English writer. The dialects of savages, which most resemble what all languages originally were, have few words, because they have few ideas to express, and such ideas as are expressed are wonderfully simple. Thus, the Tasmanians, when they wanted to denote what we mean by "tall" and "round," had to say "long legs" and "like a ball" or the "moon" or some other round object, eking out their scanty vocabulary by the help of gesture.[1] So, too, the New Caledonians cannot be brought to understand such ideas as those conveyed by *yesterday* and *to-morrow*, and the jungle Veddahs of Ceylon are unable to remember even the names they give to their wives, unless the latter be present.[2] After this, it is not surprising that, like the Dammaras of South Africa, they are unable to count, and, consequently, have no numerals in their language. According to Mr. Galton,[3] indeed, the Dammaras are able to count as far as three, though he adds that they discover the loss of an ox, "not by the number of the herd being diminished, but by the absence of a face that they know." If two sticks of tobacco are

[1] Milligan: "Vocabulary of the Dialects of some of the Aboriginal Tribes of Tasmania," p. 34.

[2] See Mr. Hartshorne's Paper read before the British Association (1875).

[3] "Tropical South Africa," p. 132.

"the rate of exchange for one sheep, it would sorely puzzle a Dammara to take two sheep and give him four sticks." "Once," he goes on to say, "while I watched a Dammara floundering hopelessly in a calculation on one side of me, I observed Dinah, my spaniel, equally embarrassed on the other. She was overlooking half-a-dozen of her new-born puppies, which had been removed two or three times from her; and her anxiety was excessive, as she tried to find out if they were all present, or if any were still missing. She kept puzzling and running her eyes over them, backwards and forwards, but could not satisfy herself. She evidently had a vague notion of counting, but the figure was too large for her brain. Taking the two as they stood, dog and Dammara, the comparison reflected no great honour on the man."

The number of abstracts possessed by a language is a good gauge of its development. It is difficult for us to realize the mental struggles and the ages of previous preparation required for the discovery of those ideas which now seem to us so familiar. The day on which, according to the ancient legend, Pythagoras struck out the idea of the *world*, and named it κόσμος, summed up all the labours of Eastern philosophy and Greek thought before which the law and order of the universe at last lay revealed. It is to Anaxagoras, to Herakleitus, to Xenophanes that we owe those ideas of mind, of motion, of existence which form the groundwork of modern science. Nay, our own generation has witnessed the creation of more than one great abstract idea, henceforth to be the common property of mankind, through the word by which it is expressed. To have won for the race a single idea like that of *natural*

***selection*** is a higher glory than the conquests of a Cæsar. Man's first work, according to the old Hebrew writer, was to give names to "every living creature;" and the Assyrian story of the Creation, with the profound conviction that chaos is there where language is not, begins its record with the words:

> "At that time the heaven on high was unnamed;
> In the earth below no name had been recorded:
> And chaos unopened was their sire."

The words by which we express such abstract and spiritual ideas as those of *spirit*, of *virtue*, or of *intellect* are all, when examined, found to have a purely sensuous origin. The *spirit* was but "the breath," *virtue* "the quality of a man," *intellect* "a choosing between." We can only rise from the known to the unknown, from that which we perceive to that which is invisible. As the developing mind starts from the objects of sense, and passes over the bridge of analogy to objects of thought and reason, so, too, language, at the outset, had words only for the visible and the sensuous; and not until it called in the aid of metaphor could it express the higher imaginations of the soul. If we look closely into language, we may see how strewn it is with worn-out and forgotten metaphors. "They are," as Carlyle has said, "its muscles and tissues and living integuments," the aids whereby language can communicate something more than the things which we see and feel. Even among ourselves, there are few who can afford to dispense with the assistance of concrete illustration and metaphor when dealing with abstract subjects. They throw a halo of light around the impalpable objects of

philosophic reasoning, and enable us to picture them before our minds. It is this picture-language, as we may call it, which gives so much of its charm to poetry, which made verse the first embodiment of literature, and lends to savage speech its poetical garb. The creations of mythology are in the main its work; and even modern science does not despise a "nature" which clothes itself with the attributes of humanity and of sex. It was the power possessed by language of rising from the concrete to the abstract that made the earliest hieroglyphic systems of writing possible, and which to this day enables the Chinaman to adapt his mode of writing to the introduction of new ideas. Like the Chinese lexicon, the multitudinous wealth of language can be traced back to a few and simple elements.

If we watch the first attempts of children to speak, we find that their wants and wishes are conveyed in a very small number of sounds, and that often a single word is made to express what we should represent by several. Now children, in spite of their inherited instinct of speech, are the best example we can have of the way in which the first men acquired their language, remembering only that the child nowadays has a complete language already framed for him, whereas the first men had to frame theirs for themselves. What the individual child now learns in a few years has been the laborious production of many a century and many a generation. But the child has still to learn it like his forefathers before him, and in learning it he may modify its sounds, its forms, or the meaning of its words, and so take part in bringing about what we call the growth of speech.

But it is not only by watching children that we can gain some idea of the way in which languages originally grew up. When we try to acquire a foreign tongue, not from books, but from conversation, we first pick up a few sentences and words, and then, by the help of these, endeavour to make our thoughts and wishes intelligible to others. But since the sentences and words we know are but few, we have to look about us for the simplest mode of expressing ourselves, and are obliged to make our expressions stand for many different ideas. Even then, however, our vocabulary is imperfect, and we often find ourselves wholly at a loss for any word by which to convey our meaning. Gestures are the only resource left to us, and it is by their help that we supplement our deficient knowledge of the spoken language. Indeed, the first words and sentences learnt at all may have been acquired by the same means. Travellers have drawn up vocabularies and phrase-books of the idioms of unknown tribes by pointing to objects or making use of gesticulations, and then observing what articulate sounds were associated with these movements by the persons addressed. It is a good example of the way in which gestures precede spoken language, and lead on to the latter. The same gestures are for the most part understood in the same sense among all the manifold races of men; a shake of the head signifies "no," a pointing of the finger symbolizes "locality." Gestures bridge over the gulf which separates inarticulate from articulate speech, and they are still a means of communication for the deaf-mute. But we must distinguish between gestures and that instinctive play of feature which Mr.

Darwin has treated of in his work on the "Expression of the Emotions." Gestures, in the proper sense of the term, are only partly the same for all races of men; no doubt the instinctive element preponderates in them, but we have to allow also for a certain element of conventionality. There is not the same physiological reason why a shake of the head should denote a negative as there is why a particular expression of the face should indicate pleasure, or pain, or surprise, or why a feeling of shame should bring a blush to the cheek. When we are told that the Veddahs of Ceylon are never seen to laugh, we at once infer that they have no sense of humour and no power of merriment. Gestures are rather a sign for the intellect than for the emotion, and since the same feeling must express itself similarly in the case of every one while the same thought need not, it is evident that that which expresses thought admits the element of conventionality more than that which expresses feeling. Pain must always be pain, and affect the nerves and muscles in the same way; what is thought of, on the contrary, may be conceived very differently, and represented in an equally varying manner. Hence it is that we share the play of feature with the brutes, whereas gestures—embodying as they do a rational rather than an emotional element—are for the most part peculiar to man. Man is man in virtue of language, and it was gestures that first made language possible.

But gestures alone are often but a poor resource for either the child or the traveller. They fail to express the meaning intended. Let us suppose a child, for example, to have been scratched by a cat, or frightened

by a herd of cows. It can represent the pain it has suffered, or the terror it has experienced by gestures, but if it be unacquainted with the names of cat and cow, it can only point out those animals by imitating the sounds they utter; and *miow* and *moo-moo* become the nursery names for "cat" and "cow." And what still goes on in the nursery was a general procedure in the childhood of mankind. The domestic cat was introduced into Egypt from Nubia in the time of the eleventh or twelfth dynasty, and the Egyptians forthwith called it the *miau*, a name which it still bears in China. Indeed, the French and German equivalents of "puss," *mimi* and *mitz*, have the same origin as the *miow* of the nursery or of Egypt, though German could not refrain from borrowing the unmelodious ending of *katz*. Dr. Comrie states[1] that the natives of the north-east coast of Papua call the dog a "bow-wow," and when first shown an iron axe named it *din-din*, from the sound which it seemed to make.[2] This imitation of natural sounds goes by the long and barbarous name of *Onomatopœia*, and though an attempt has been made to substitute "Imson" (*imitatio son-i*) for "onomatopœic word," it has failed.[3] Now if we are to infer anything from the habits of the nursery, and of those savage tribes which best represent the infancy

[1] "Journal of the Anthropological Institute," vi. 2 (Oct., 1876), p. 119.

[2] A "pig" is called *poro-poro*, and the act of "eating" *nam-nam*. We must remember, however, that just as a nurse will speak to a child in nursery-language, so a savage on being asked the name of an object may have recourse to onomatopœia, instead of giving the real native word.

[3] Plato termed it ἀπείκασμα ("Krat.," 402 D, 420 C.).

of mankind, onomatopœia must have played a large part in the formation of language. Its advocates have done much harm to what Professor Max Müller has happily termed "The Bow-wow Theory," by endeavouring to trace back words as we now find them to an onomatopœic origin; but this does not prove that the theory when scientifically applied is false. It is true that there are few words like *miow* which can be immediately referred to an onomatopœic source; it is true also that articulate language begins with roots, from which its scientific student must derive its words; but it is equally true that a large proportion of these roots—or rather of what these roots presuppose—was formed by the help of onomatopœia. It is not only objects like a dog or an iron axe that the Papuans met by Dr. Comrie named from the sounds they made upon his ear; an action like that of "eating" was equally called *nam-nam* from the noise produced by the process. We who speak a highly developed language, the worn-out *débris* of which are more than sufficient for the creation of new words and forms, can hardly realize the influence of onomatopœia upon rude and uncivilized jargons. Of course it is not necessary that the imitation of natural sounds should be an exact one; indeed, that it never can be: all that is wanted is that the imitation should be recognizable by those addressed. The same natural sound, consequently, may strike the ear of different persons very differently, and so be represented in articulate speech in a strangely varying manner. Thus, as has been noted before, *bilbit*, *glut-glut*, and *puls*, are all attempts to represent the same sound. Just as colours strike differently upon the eyes

of different men, so also do sounds upon their ears, and the poverty of primitive languages in terms to denote the colours is parallel to the imperfection with which they represented natural sounds.[1]

Besides gestures and onomatopœia, there is a third way in which we can make ourselves intelligible without knowing the articulate language of those to whom we are speaking. This is by making use of interjectional cries. Like the play of feature, interjectional cries are the same for all men; we all make much the same kind of exclamation when hurt, or angry, or surprised. They express our emotions, not our ideas; and since the main object of language is to express ideas, interjectional cries can have had but a small share in its formation. Here and there we can point to a few roots, like *agh* (*ach*) in Aryan, which seem to have this derivation; but before the root *agh* could become a root in the linguistic sense of the word, and give rise to a number of derivatives, it was needful for it to cease to be an interjection; that is to say, it had to express an idea, and not an emotion. Many of our modern interjections, like *alas*, *lo*, are words that once possessed a full conceptual meaning, but have lost their original signification, and been degraded to the level of mere emotional cries. So hard is it for language to admit anything which was not from the first significant in

[1] On the whole subject of the onomatopœic origin of words, see (but with caution) Wedgwood's introduction to his "Dictionary of English Etymology" (first edition, 1859), and Farrar: "Chapters on Language," and "Origin of Language" (1860), ch. iv. Compare Buschmann in the "Abhandlungen der k. Akademie der Wissenschaft zu Berlin" (1852).

thought. Interjections remind us of the animal side of our nature, and they have forced their way into language only because that animal side must be represented to the mind. But in thus forcing their way they have ceased to be the simple utterances of pleasure and pain, and become expressive of conceivable states of feeling. Only in so far as the first men approached the brutes more nearly than we do, were interjectional cries likely to help them in building up the structure of speech. We may, however, include under the head of interjections those instinctive cries uttered by men when engaged in a common work, to which Professor Noiré would trace all roots whatsoever.[1] The sense of life and power that makes the child shout or the bird sing, and is the ultimate motive of human speech, causes us to beat time by the help of rhythmical utterances. And though the utterance be but a monotonous sing-song, it becomes a symbol and sign of the action it accompanies to all those who have taken part in it, and in course of time may pass into a word. How many of the roots of languages were formed in this way it is impossible to say, but when we consider that there is no modern word which we can derive from such cries as the sailor makes when he hauls a rope, or the groom when he cleans a horse, it does not seem likely that they can have been very numerous. Still they were probably more numerous than the roots formed from other interjectional cries.

The origin of language, then, is to be sought in *gestures*, *onomatopœia*, and to a limited extent *interjectional cries*.

[1] See page 82.

Like the rope-bridges of the Himalayas or the Andes, they formed the first rude means of communication between man and man. Onomatopœic words and interjections came to be metaphorically applied to denote other ideas than those for which they properly stood, while the relations of grammar were pointed out by the help of gesticulation. Thus, by imitating the gurgling of water and pointing to the mouth, a man could signify what we express by the sentence, "I wish to drink," or, "I am thirsty;" and by uttering a cry of pain and pointing to a knife, he could show that he had been cut by it. In course of time a collection of words would be formed, each of which represented what we now call a sentence. For a sentence, it must be remembered, is the name given by the grammarian to what the logician would call a proposition or a judgment, and though a judgment may be analyzed into subject and object and connecting copula (or mental act of comparison), we cannot, if we wish to be intelligible, separate its elements one from the other. The whole sentence, the whole Λόγος, as the Greeks would have termed it, is the only possible unit of thought; subject and object are as much correlated as the positive and negative poles of the magnet.

Language, then, we may lay down, begins with sentences, not with single words. The latter exist only for the lexicographer, and even the lexicographer has to turn them into sentences by affixing a definition if he would render them intelligible. We are accustomed to see sentences divided into their individual words in writing, and so we come to fancy that this is right and natural. But the very accent which we lay upon our

words ought to show us how far this is from the truth. The accent of a word varies according to its place in a sentence; for purposes of accentuation, we regard not the individual words, but the whole sentence which they compose. And this outward fact of accentuation is but an indication of the inward fact of signification. All language must be significant; but until the whole sentence is uttered, until the whole thought which lies behind it is expressed, this cannot be the case. The expression of the thought may be faulty and imperfect, but unless the thought be sufficiently expressed to be intelligible to another, it has not yet embodied itself in the form of language. The Greek Λόγος was not the individual word, which, apart from its relation to other parts of the sentence, has no meaning in itself, but the complete act of reasoning, which on the inward side is called a judgment, and on the outward side a sentence or proposition. The single word is to the sentence what syllables and letters are to the single word. We may break up a word into the several sounds of which it is composed, but this is the work of the phonologist, not of the speaker. So, too, we may break up a sentence like "Don't do that" into the four words *Do-not-do-that*, but this, again, is the conscious procedure of the grammarian. Sentences may be of any length; they may consist of a single syllable, like *go!* or *yes*, or they may have to be expressed by a large number of separate "words"; what is essential is that they should be significant to another, should adequately convey to his mind the whole thought that is intended to be expressed. Unless the sounds we utter are combined into a sentence, they have no more

meaning than the cries of the jackal or the yelping of the cur; and until they have a meaning, and so represent our thought, they do not constitute language. The sentence, in short, is the only unit which language can know, and the ultimate starting-point of all our linguistic inquiries.

It is not necessary that the sentence should be divided into its component words in writing any more than it actually is in speech. The French *je le vois* is as much a single, undivided group of sounds as the Basque *dakust* or the Latin *amatur*. In the polysynthetic languages of America, in which the separate words of a sentence are cut down to their bare stems and fused into a single whole, the sentence can as little be split up into its elements as an ordinary compound in Greek or German. The ancient Hindu grammarians, with that wonderful insight into language which has made their labours the basis of modern scientific philology, treated the several words of a sentence just as we treat syllables and letters. A number of single words are run into one, the sounds at the end of each word being modified to suit those that follow, in accordance with the so-called rules of Sandhi, and the whole group of words is then written without division. Thus the word *trinairguṇatwamâpannairbadhyante* must be analyzed into *trinais*, "with grass blades" (an instrumental pl.), *guṇatwam*, "a rope's state" (acc. sing.), *â-pannais*, "having attained" (part. pass. of the compound verb *â-pad*, agreeing with *trinais*), and *badhyante*, "they are bound" (3rd pl. pres. pass. of the verb *bandh*). In fact, a little attention will convince every one that even in our own language not only does

the accent of a word depend upon its place in the sentence, but that the sound with which it terminates equally depends upon the sound which follows. We pronounce "of" in one way when it stands by itself in the dictionary, in another way when it precedes "thin" or "thick."

If the sentence is the unit of significant speech, it is evident that all individual words must once have been sentences; that is to say, when first used they must each have implied or represented a sentence. And this is borne out by an examination of the records of speech. We shall see hereafter that words may be divided into conceptual or presentative, and pronominal or representative, and that wherever we can trace back the latter to their source, we find them to have been originally presentative. Thus words like "and" or "because" are now purely symbolic and representative; there was a time, however, when they denoted the very definite ideas of "a going further,"[1] and "by the cause."[2] Now, if we look carefully into the nature and essence of these presentative words, it becomes clear that they were at the outset so many shorthand notes or summaries of various sentences. Take, for example, the word *memorandum*. Before it can form a part of language, *memorandum* must be significant. This can come about only in two ways. Either we must accompany the utterance of the word *memorandum* with gestures which imply "This is a

[1] Latin *et*, Greek ἔτι, Zend *aiti*, Sanskrit *ati*, are referred by Weber ("Indische Studien," ii. p. 406) to the root *at*, "to go."

[2] As in Chaucer: "Knight's Tale," 2488:—"But by the cause that they sholde ryse."

memorandum," or "Write a memorandum," or something similar, or else we must express the meaning of these gestures by equivalent words. That is to say, the isolated word *memorandum* must be incorporated into a sentence by being brought into relation with other words, before it can become part and parcel of living speech. Taken by itself, it belongs to the dictionary-maker only, and even he has to add a definition, that is to say, to make it the subject of a sentence, if his dictionary is to be something more than a mere catalogue of unmeaning sounds. Before a definition is supplied by the lexicographer or the reader, a word is not yet a word; it has no meaning.

The student of language, then, cannot deal with words apart from sentences. The significant word—that combination of sounds which represents a thought—is really a crystallized sentence, a kind of shorthand note in which a proposition has been summed up. Each advance in philosophy and science is marked by the acquisition of a new idea or fact, the result of a long train of previous observations and reasonings: and the more complex the idea or the fact, the more numerous will be the reasonings, the sentences or judgments, which underlie it. What a multitude of judgments, which when expressed in language we call sentences, are implied by the two simple words *humanity* and *gravitation!* It is a truism in psychology that the terms of a proposition, when closely interrogated, turn out to be nothing but abbreviated judgments. The ordinary theory of modern comparative philologists traces all languages back to a certain number of abstract roots, each of which was a sort of sentence in embryo, and though this theory is scarcely tenable in the

form in which it is usually presented, it is yet certain that there was a time in the history of speech when the articulate or semi-articulate sounds uttered by primitive man were made the significant representatives of thought by the gestures with which they were accompanied. And this complex of sound and gesture—a complex in which, it must be remembered, the sound had no meaning apart from the gesture—was the earliest sentence. The isolating languages of Further India still express a new concept by the juxtaposition of two words which denote that it is the species of a higher genus. Thus, in Taic or Siamese *kin* is to "eat," but when *nam*, "water," is added, *kin-nam* means "to drink;" *mi* is "rich," *mi din*, *mi nám*, "earthy," and "watery," that is to say, "rich (in) earth" and "water."[1]

These examples from the far East show us the way in which our words first came into existence. They have grown out of sentences by a process of comparison and determination. Two or more sentence-words, referring to the same object or idea viewed under different relations to the speaker, might be set over against one another, and the phonetic part in which they agreed taken to denote the object or idea considered by itself. Thus in Semitic *kâtal* is "he killed," *kotêl*, "killing," *k'tol*, "to kill" and "kill," *kâtûl*, "killed," and *katl*, *kitl*, or *kutl*, "a killing," where the difference of signification is marked by a difference of vowel,

[1] See "A Comparative Vocabulary of the Barma, Malayu, and T'hai Languages," published at Serampore in 1810. A Siamese compound like *lúk-mai*, "fruit," literally "son of wood," is an exact equivalent of the Hebrew "son of Belial" for "sinner," or "master of hair" for "hairy."

and co-existing forms of this kind, when compared with each other, would determine that the three consonants *k-t-l* had the general sense of "killing." But an inflectional language does not permit us to watch the word-making process so clearly as do those savage jargons in which a couple of sounds like the Grebo *ni ne* signify "I do it" or "you do it," according to the context and the gestures of the speaker. Here by degrees, with the growth of consciousness and the analysis of thought, the external gesture is replaced by some portion of the uttered sounds which agrees in a number of different instances, and in this way the words by which the relations of grammar are expressed come into being. A similar process has been at work in producing those analogical terminations whereby our Indo-European languages adapt a word to express a new grammatical relation. Thus, in English, the Greek termination *ize* (or *-ise*) has been abstracted from the words to which it properly belonged by comparing them together, and has been instinctively, as it were, invested with a particular meaning, so that we can now turn any word we like, whether of Greek origin or not, into a transitive verb by attaching to it this suffix. In *humanize*, for instance, it is added to an adjective of Latin origin, in *jeopardize* to a Romanic compound. When once a sentence-word had been broken up into single words by comparing it with other sentence-words relating to the same subject, it was easy to extend the operation to other sentence-words, which were accordingly broken up and analyzed without being compared with related sentences. The phonetic expression of the verbal copula by which the subject and object were con-

nected together, was the last result of this analytic process; it was long left to be supplied by the mind, the simple juxtaposition of subject and object being considered sufficient to suggest the mental act by which they were compared or contrasted, and to this day many languages, those of Polynesia, for example, still remain without a verb. Thus, in Dayak *kutoh ka-halap-e arut-m*, "thy boat is very beautiful," is literally "very its-beauty thy-boat," *andi-m handak imukul-ku*, "thy brother will be struck by me," means properly, "thy-brother my striking-being," while to express "he has a white jacket on," the Dayak must say, *ia ba-klambi ba-puti*, "he with-jacket with-white."[1]

As we shall see hereafter, all the facts at our disposal tend to show that the roots of speech, or at all events the earliest sentence-words out of which the later languages of mankind have sprung, were polysyllabic, and other facts go equally towards proving that the terminations of these primitive roots or sentence-words displayed a wearisome monotony of agreement. Survivals, as Mr. Tylor has happily termed them, are among the most valuable means we have of arguing back to an earlier state of things, and we can only treat as a survival the habit of a child whom I know, who in her first essays at speech affixed a final *ö* to almost all her words, saying for instance, *come-ö* and *dog-ö* for "come" and "dog." The older a speech is, the more it has suffered from the wasting and wearing effects of time, and a language like the Chinese, which stands out as some weather-beaten

[1] Steinthal: "Charakteristik der hauptsächlichsten Typen des Sprachbaues," pp. 165, 171, 173.

granite peak among the languages of a later day, has so concealed all traces of the originally pluriliteral character of its vocabulary, that it is only within the last few years that Sinologues, like Dr. Edkins and M. de Rosny, have detected it. So, we may infer, will it also be found with all the other languages of the world; the first utterances of mankind were polysyllabic, though not perhaps of such monstrous length as the sentence-words of Eskimaux or Algonquin. In the friction and comparison of these utterances similar terminations came in some instances to be set apart to denote the relations of grammar; in other instances the grammatical relations which lay implicit in the sentence-word were made explicit by its being set over against another sentence-word similarly employed elsewhere; and so it came in course of time to be what the Chinese would call an "empty word" with no presentative meaning of its own. Thus, on the one side, as M. Bergaigne has shown, the old adjectival suffix *bha* (*bhi*) in our own family of speech has become the sign of the dative and genitive cases (Latin *ti-bi*, dat., Old Slavonic *te-be*, gen.) just as the adjectival termination *sya* or *tya* (as in δημόσιος, "belonging to the people") has become the sign of the genitive (ἵππο[σ]ιο); while, on the other side, the Chinese *tsz̆ h'ai*, "to be hurt," is literally "eat hurt," and *tshyeu thyan*, "autumn," "harvest-heaven." The Chinese word can still be used indifferently as a noun, a verb, an adverb or the sign of a case much like such English words as *silver* and *picture*, and its place in the sentence alone determines in what sense it shall be construed. This is an excellent illustration of the early days of speech, when

the sentence-words contained within themselves all the several parts of speech at once—all that was needed for a complete sentence; and it was only by bringing them into contact and contrast with other sentence-words, that they came to be restricted in their meaning and use, and to be reduced into mere "words." Language never forgot the mode in which it had framed its first vocabulary, and the Greek and Roman, as much as the Red Indian of America, in framing their compounds instinctively stripped off the so-called inflections, and reduced the word they placed first to its simple stem. That part alone of the word which remained unchanged and unchangeable, could be made use of when the word was to be treated as simply a word and nothing more. The North American languages reflect more faithfully than the languages of the Old World the primitive condition of speech, and the North American languages can possess from six to eight thousand different verbal forms or sentences without having abstracted from them a single *word* which will express the sense of the verb out of all relation to anything else.[1] Thus, the Cheroki has thirteen verbs to denote particular kinds of "washing," such as "washing the head," or "the hands," or "myself," and each of these verbs has a multitude of forms, but no isolated word to denote "washing" in general has as yet been extracted from them.[2] The difficulty has often been noticed of getting a savage or barbarian to give the name of an object without incorporating it into a sentence

[1] See Du Ponceau: "Langues d'Amérique," pp. 120, 200, 234, 236, 237.

[2] Pickering: "Indian Languages," p. 26.

or bringing it into relation with something else. Thus, a Kurd who supplied Dr. Sandwith with a vocabulary of the Zaza dialect, was so little able to conceive of words like "head," "father," "hair," except as related to himself or some one else, that he had to combine them with a personal pronoun, saying *sèrè-min*, "my head," *pièmin*, "my father," *porè-min*, "my hair." The Hoopah and Navaho vocabularies, published by Schoolcraft,[1] similarly prefix the possessive pronoun *h'*, *hut* to all their words, as *hotsintah*, *hut-tah*, "forehead," *huanah*, *hunnah*, "eye," *hoithlani*, *hutcon*, "arm;" and Dr. Latham points out the same fact in Wallace's vocabularies from the river Uapes, where *eri-bida*, *eri-numa* in Uainambeu, *tcho-kereu*, *tcho-ia* in Juri, and *no-dusia*, *no-nunia* in Barrè, literally "my head," "my mouth," are given as the equivalents of simple "head" and "mouth." He also states that he has noticed the same peculiarity among the English Gipsies.[2] The making of words as distinct from sentences was a long and laborious process, and there are many languages like those of North America in which the process has hardly yet begun. A dictionary is the result of reflection, and ages must elapse before a language can enter upon its reflective stage. Our children still learn the languages they speak by first acquiring the knowledge of certain phrases and sentences, and then gradually analyzing them into words, and the adult who wishes to gain a successful acquaintance with another tongue must pursue

[1] Part iii. (1853), pp. 420-445.

[2] See Latham in the "Proceedings of the Philological Society," vol. vi. (1852-3), p. 85; and in the "Transactions of the Philological Society" for 1856, pp. 40, 41.

the same plan. What Steinthal says of the Chinese, that its "smallest real whole is a sentence, or at least a sentence-relation," [1] is true of other languages as well, and the words of which a sentence is composed have no actual existence apart from that sentence, except for the phonologist and the lexicographer. Until the whole sentence is completed the individual words of which it consists have no more signification than the syllables *ful* and *ness* or *cy* and *ly* which occur so plentifully in English. The first condition of language is that it should be significant, and words are only significant when they stand in relation to one another. The *logos*, the true word, said Aristotle, was the cause of knowledge; the individual words of which it was composed were but symbols and tokens of the impressions of sense.

Now, if language be the embodiment of thought, and if thought can only express itself under the form of the complete sentence, it is plain that we must look to the sentence for a true classification of languages. The sentence expresses the way in which we think, and the different forms assumed by the sentence—that is to say, the different modes in which the relations of subject, object, and verb are denoted will constitute the only sound basis for classifying speech. The particular relation between the several ideas summed up in a judgment or sentence agrees with the manner in which we regard the objects about which we think and speak. If, for instance, we have no clear idea of any distinction between ourselves and the objects around us, in talking about them any reference to ourselves will be left out of

[1] "Charakteristik," &c., p. 113.

sight. Instead of saying, "*I* am running," where the speaker distinguishes himself from the act in which he is engaged, we should say like the Romans *curro*, where the personal pronoun has no separate and independent mark of its own. Different races of men do not think in the same way; and, consequently, the forms taken by the sentence in different languages are not the same. Thus in the so-called isolating languages, the separate terms or ideas which make up the sentence are not subordinated to each other, and fused into a single whole, but every word remains a separate and distinct sentence. The Chinaman has to say, "*thyan-hi leṅ tsyaṅ-šaiṅ-lei*"—literally, "heaven-air cold begin-rise-come,"—if he wants to state that "the weather began to be cold;" and the Burman's way of expressing "we are going," is by saying, "*ṅā dō dhuá kra dhaṅ*"—"I multitude go multitude which." In cases such as these, the ideas are each set down independently, instead of being subordinated one to another, and the words which embody them are accordingly contrasted with each other like so many independent sentences. On the other hand, in the agglutinative languages, the ideas which make up the sentence, though still kept distinct and independent, are no longer set over against one another, but brought into mutual relation and harmony, and regarded as of equal force and meaning. The root or stem still stands out clearly and separately, and the suffixes of relation are marked with equal distinctness. But for all that, the inward fact of the incipient subordination which exists between them is denoted by the outward fact of vocalic harmony, whereby the vowels of both stem and suffix have to belong to the

same class. The Turkish sign of the infinitive, *mak*, has to become *mek* after a root like *sev*, "love," though both root and suffix still retain their own individuality; and while *at-lar* is "horses," *ev-ler* is "houses." The grammatical relations expressed in the Aryan class of languages by case-endings and person-endings, or by prefixed pronouns and prepositions, have to be represented, as a general rule, by postfixes, since in no other way can sufficient emphasis be laid upon them, and the danger avoided of their being swallowed up in the verb or noun. Our "I love," or "the man," look but little different in writing from the Turkish *sev-r-im*, or the Basque *gizoná*, *gizonák;* the case is quite altered, however, when we try to pronounce these words, the accent falling on the verb in our "I love," but allowing the distinction between verb and pronoun to be clearly felt in the Turkish *sevrim*. It is among the inhabitants of mountainous and cold regions in the Aryan and Semitic families of speech—among Albanians, Bulgarians, Scandinavians, and Aramæans—that the definite article is postfixed instead of being prefixed; and we can see at once what an emphasis and distinctness would be given to it by such a position. Only where foreign influences have been at work do the agglutinative languages change the order of the words in the sentence and, as in the case of the Hungarian definite article *a*, *az*, prefix the words expressive of the grammatical relations, instead of postfixing them. Still further, to mark out the several parts or terms of the sentence, the objective pronoun may be inserted between the subjective pronoun and the verbal root or stem; and so we may have a sentence-word like the

French *je vous donne*, as in the Basque *zamaztet* (from *eman*, "to give"), or the converse arrangement of the terms, as in *n-aza-zu-n*, "that you may have me" ("me-have-you-may"). The incorporating languages, as they are called, are the oldest examples of the agglutinative class, for they go back to the time when the speaker had not yet begun to analyze his sentences, and when he could not say simply, "I give," without finishing the sentence with the objective pronoun. Hence it is that in Basque we must say *dituzte beren liburnac*, "they have them their books," instead of simply "they have their books;" and in Accadian, the language of primitive Chaldea, "I built a house" would be *é mu-n-rû*,[1] literally "house I-it-built."

Very distinct from these incorporating tongues are the polysynthetic or incapsulating dialects of America, in which the words that make up a sentence are stripped of their grammatical terminations, and then fused into a single word of monstrous length and appearance. Thus the Algonquin would say, *wut-ap-pé-sit-tuk-quś-sun-noo-weht-unk̆-quoh*, if he wished to express the sentence "he, falling on his knees, worshipped him;" and this cumbrous compound denotes exactly what we split up into seven words. These polysynthetic languages are an interesting survival of the early condition of language everywhere, and are but a fresh proof that America is in truth "the *new* world." Primitive forms of speech that have elsewhere perished long ago still survive there,

[1] This order of the pronouns was a later innovation in the language, and seems due to Semitic influence. In the older period of the speech the form was *rû-n-mu* or *rû-mu-n*.

like the armadillo, to bear record of a bygone past. The conception of the sentence that underlies the polysynthetic dialects is the precise converse of that which underlies the isolating or the agglutinative groups. The several ideas into which the sentence may be analyzed, instead of being made equal or independent, are combined like a piece of mosaic into a single whole. The sentence has not passed beyond its primitive form, or rather that primitive form has been retained in spite of the growth and development of the languages to which it belongs. It is possible that the Eskimaux may be the descendants of the savage races who inhabited the caves of southern France, when the rivers were stiff with ice for half the year, and the reindeer roamed freely through the woods and meers; at all events, among the icebergs and dark winters of the North, they have preserved their old habits of thought, their old mode of viewing the world about them, almost unchanged. And yet our own class of speech, that class to which we give the name inflectional, and which we sometimes think is the crown and standard of all other kinds of language, is not so far removed in usage from the Eskimaux or the Algonquin as are the isolating dialects of China and the agglutinative jargons of Mongol and Turk. In the inflectional group the words or suffixes which denote grammatical relations are subordinated to the words which express objects or actions —that is to say, to nouns and verbs. The termination of the Latin *currit* has lost all distinct and independent meaning of its own; apart from the verbal stem to which it is subordinated, it is a mere *flatus vocis*, a mere empty sound. In flection proper, which we may see best ex-

emplified in the Semitic tongues, the relations of grammar are denoted by internal vowel change—*adamu*, "man," for instance, being nominative, *adami* genitive, and *adama* accusative. It was only afterwards, and by the force of analogy, that first unmeaning suffixes and then agglutinated words which were gradually assimilated to them, came to take the place of internal vowel change. What we may term the inflectional instinct sought to express the various relations of the sentence, as they successively rose to consciousness, out of the original sentence-word itself. When separate words like *wards* or *ly* (*like*) were afterwards employed for the same purpose, they first had to lose their own individuality, to become empty words, representative and not presentative, and as such to be engrafted upon the old stems. The Greek φη-μί, or the Sanskrit *ad-mi*, "I eat," are single wholes; the first personal pronoun *ma*, weakened to *mi*, has lost all life of its own, and its sole right to existence lies in its absorption into the stems φη- and *ad-*. But an inflectional language cannot carry out its fundamental principle with logical completeness. All the subordinate relations of a sentence cannot be brought into the same close connection with the principal idea as in φημί and *admi*. Sentences like "I speak" or "I eat" may be comprehended under a single word; but there are many sentences where this is impossible, and where the attempt to express in language the relation between the principal and the subordinate, between the subject and the attribute, has to be given up. In the Latin *poeta bonus*, for example, the subject and the attribute appear as separate words; and there is nothing in the flection attached to

each to show that they stand in any relation whatsoever one to the other. So far as the form goes there is nothing to tell us whether the two words mean "a good poet" or "the poet is good." The fundamental principle of flection has been violated, and the language is on the high road to that more developed condition in which, as in Chinese, the two ideas are set plainly and distinctly one against the other, and the mind is left to supply the relation between them. This impossibility of carrying out thoroughly the principle of flection brings about an analytic tendency in all inflectional forms of speech. The longer an inflectional language lives the more analytic it becomes. The Englishman says "I will go," and the Frenchman *le monde*, where the Latin was contented with *ibo* and *mundus*. One by one the grammatical relations implied in an inflectional compound are brought out, as it were, into full relief, and provided with special forms in which to be expressed; but the change that has taken place is but an apparent one, the inflectional spirit of the language still remains; and though we write "he runs," "I will go," we pronounce as if they were single words. The pronoun and the verb, taken apart and by themselves, convey no meaning to our minds; we have to combine them before they become significant, and (the order of the words excepted) there is but slight difference between an English sentence like "never to be sufficiently relied upon," and the Tamil *sārndāykku*, "to thee that hast approached," to be analyzed into *sār*, "approach," *d* sign of the past, *āy*, "thee," and *ku*, "to."

Each of the leading classes of speech naturally com-

prises various species or subdivisions. Thus the isolating Chinese differs from the isolating dialects of Further India, in that the Chinese mode of expressing the relations of the sentence by position is replaced in these by the use of words like *prū*, "do;" *khā*, "suffer;" *khŏn*, "possession;" *mha*, "from." So, again, in the agglutinative class, the Bâ-ntu languages of Southern Africa prefix the same substantive, worn down, it may be, to a mere unmeaning symbol, to each of the words in a sentence which have to be brought into relation with each other; *o*-ka-ti k-*etu o*-ka-*ua*, for instance, being "our fine stick," or literally, "stick ours fine." The Malayo-Polynesian dialects have not yet attained to the conception of the verb; thus *yaku imukul olo* ("I smitten people") is "I am smitten by the people;" *iïgaṛa-ku ia tatau* ("my-thought he rich") "I thought he is rich;" *ia baklambi baputi* ("he with-jacket with-white") "he has a white jacket on." Basque grammarians generally hold that the Basque has but two verbs, "to be" and "to have," while, on the other hand, there are many languages which lack precisely these two.

But in all these sub-classes, just as in the main classes of speech, it is the different conception of the sentence and the form it takes which characterize the whole language. However much alike may have been the circumstances by which the first communities of men were surrounded, they yet viewed the world without them and their own relation to it with different eyes. The idea they formed of the sentence and its parts was not the same everywhere. When with the growth of consciousness came also the formal expression in utter-

ance of the relations of the several parts of the sentence, it was inevitable that this expression should clothe itself in essentially various forms. And the psychological peculiarity which originated each of these forms—a peculiarity itself the result of previous experiences and tendencies—became continually more definite, more confirmed, more unalterable. The logician may reduce all forms of the affirmative proposition or judgment to the single "A is B," but the grammarian knows that this is like the *jus gentium* of the Romans, a mere abstraction from a limited number of observed instances. It may be the right form for the sentence to take in the manifold languages of the world, but as a matter of fact it has never been taken in any one of them. The form of the sentence as shaped by the primitive language-builders of each human community has imprinted itself indelibly upon the linguistic consciousness of their successors. Racial type and characteristics will change as soon as the conception of the sentence. Many of the agglutinative languages have approached so nearly to the phænomena of inflection, as to make it difficult to determine why they should not be classed with the inflectional tongues; and yet for all that they remain agglutinative, and have remained so as far back as we can trace them. Our own language is agglutinative, and even isolating in many respects, while the French *je vous donne* seems a clear instance of incorporation. The Chinese, on the other hand, shows much that is agglutinative, much even that resembles inflection, and it is only the polysynthetic languages of America that remain true to their stereotyped primæval character. Nevertheless, in spite of all

this apparent confusion and overlapping, this borrowing, as it were, of characteristics from other families of speech, the great types of language stand out each of them visibly and distinctly. Their broad characteristics can be clearly sketched, their essential diversity easily felt. It is only when we come to map out the boundaries between them, to determine where isolation ends and agglutination begins, that we find ourselves at fault. Here as elsewhere in nature there is no sharply-defined line of division to be drawn; species passes gradually and insensibly into species, class into class. But in spite of this, species and classes really exist, each with its own type and characteristics, each founded upon its own conception of the sentence and its parts. When we remember that the sentence, and not the isolated word, is the starting-point of philology—when we make it what the logician would term the *fundamentum divisionis* for our classification of speech—there is no longer any difficulty in distinguishing between the several families of speech, and assigning to each its character and place. The Finnic idioms have become so nearly inflectional as to have led a recent scholar to suggest their relationship to our Aryan group; nevertheless, they have never cleared the magical frontier between flection and agglutination, hard as it may be to define, since to pass from agglutination to inflection is to revolutionize the whole system of thought and language and the basis on which it rests, and to break with the past psychological history and tendencies of a speech. There are South American butterflies whose colours have come to resemble so closely those of the plants on which they are found as

to be indistinguishable from them; for all that, the butterfly still remains a butterfly, and the plant a plant.

Such, then, is language in its origin and its nature. It is significant sound, the outward embodiment and expression, however imperfect, of thought. Before sound can become significant it must express the whole thought or judgment; that is, it must take the form of a sentence. Historically, the sentence and not the word comes first. The sentence consists of two factors, one the external sound, the other the internal thought, and neither of these factors can be disregarded by a true science of language.

Now, science is accurate knowledge. The statement may seem a truism, but it is a truism which has sometimes been forgotten. For that which is accurate is only that which can be defined and limited, that of which all the boundaries, as it were, are distinctly mapped out and known. But the boundaries of knowledge can only be discovered by the help of comparison. It is, in fact, the comparative method that constitutes the very life of inductive science; it is the application of the comparative method to any subject which brings that subject within the domain of scientific knowledge. Our knowledge that night and day follow one another alternately, or that if we put our hands into the fire they will be burnt, is not yet scientific. In order to know anything scientifically we must be able to compare it with something else, and so determine its size, or weight, or character. Our feelings may tell us that the atmosphere is hot or cold, but we have no scientific knowledge of either fact until we can measure one degree of heat or cold against another by

means of the thermometer. As soon as we know the exact amount and character of each degree of heat or cold, we have laid the foundations of a science of thermology. It is just the same in the case of language. Here, too, as soon as we can compare languages and the elements of languages together, and so measure and determine their character, we shall have the beginning of a science of language. But the comparison must be made by the aid of a common standard. The old attempts to compare Latin with Greek, or both with Hebrew, were failures because the test applied was a capricious one, depending on the subjective fancies and prejudices of the inquirer. We cannot compare two things together without having a third term—a common standard by which to measure them. We must not have one rule and measure for one set of words or languages and another rule and measure for another set. The comparative method we employ must be alike in all cases.

Language is a social product, at once the creation and the creator of society. It is independent of the caprice of the single individual, and the Emperor Tiberius could no more change a Latin word[1] than the slavish obedience of a Benedictine monastery could turn *sumpsimus* into *mumpsimus*. Unless the community as a body agree to accept the new word or form, Cæsar himself is powerless to introduce it. The changes undergone by language are brought about by the action of circum-

[1] Suetonius: "De illustr. Gramm.," 22. "M. Pomponius Marcellus . . . . quum ex oratione Tiberium reprehendisset, affirmante Ateio Capitone, 'et esse illud Latinum, et, si non esset, futurum certe jam inde;' 'Mentitur,' inquit, 'Capito. Tu enim, Cæsar, civitatem dare potes hominibus, verbo non potes.'"

stances over which the individual has no control. They are circumstances which affect the whole community, not the individual member of it. The primary condition of speech that it should be significant requires that it should be stamped and recognized by the common consciousness. Now, the circumstances that affect a whole community will always act in the same way should the conditions remain the same. Individual caprice is rendered impossible, and the forms assumed by language will be found referable to general laws. We have to deal, not with the infinite complexity of individual motives and caprice, but with the consentient action of many minds swayed by the same feelings, surrounded by the same atmosphere. The joint action of a multitude eliminates the accidental differences of individual character; all that is left is just that in which all agree, the result of the influences of which all alike are sensible. The circumstances that determine the common nature of a society determine also its common utterance, and this common utterance we call its language. It embodies all the past life and history of the community that speaks it; each phase in the development of its speakers is reflected in it as in a mirror, and its worn-out words and forms are so many crystallized embodiments of dead and bygone thought, so many fossil relics, as it were, of the past strata of social growth. The facts of language —its sentences and its words—are the result of the action of general laws and conditions; by comparing and classifying them we can discover what these general laws are, and how they act. A knowledge of these laws and their action constitutes glottology or the science

of language; the use of the comparative method by which they are discovered constitutes comparative philology.

Comparative philology, therefore, furnishes the materials whereby the science of language investigates such questions as the origin of speech, the nature of roots, or the meaning of flection. It may be said to comprise both comparative and historical grammar, comparative grammar being primarily occupied in comparing the grammatical forms and syntax of different languages of the same group; historical grammar in tracing the history of the forms and syntax of a single language. The two studies, however, necessarily overlap, comparative grammar requiring a knowledge of the individual languages compared at the successive periods of their history, or restoring the older forms of the individual languages by means of comparison, and historical grammar calling in the aid of the allied dialects to supply the deficiencies of the literary or monumental record. Quite apart from either is philology proper in the old sense of the word, which busied itself solely with literary languages and the literature they enshrine. The business of philology is to compare author with author, style with style, to determine the employment of words and phrases in the writers it investigates and pronounce upon their correctness, to emend the readings of MSS. and imitate the idiosyncrasies of particular writers. From the old-fashioned classical philology to the so-called philosophy of speech there is a wide leap, but both have been equally transformed by the new comparative method. The philosophy of speech in the hands

of men like Harris or Stoddart[1] endeavoured to attack the problems of language by "the high *priori* road," and by unverified and unverifiable reasoning from the phænomena of modern dialects to discover the origin of speech and the relation between grammar and logic. The philosophy of speech under the guidance of comparative philology has become the science of language, which may be said to comprehend both. The questions which the *à priori* method failed to resolve are now yielding their answers to *à posteriori* research, and the results already obtained have overthrown the unsubstantial speculations of the last century. The science of language has been variously termed "La Linguistique,"[2] "Linguistic Science," Glottic,[3] and Glottology,[4] and it stands in the same relation to comparative philology that physiology stands to comparative anatomy.

Now, the ultimate facts with which comparative philology has to deal are sentences and the words that have been evolved out of them. These words and sentences must be real and not imaginary—that is, they must either belong to some living speech, or be preserved in a written record, or else be restored by a sound comparison of existing words which presuppose some common ancestor. Where such real and well-attested words are not to be had, no conclusions can be drawn. Unless inscribed monuments are hereafter brought to light or comparison with the Malayan dialects results in the recovery of a

[1] Sir John Stoddart: "Universal Grammar, or the Pure Science of Language," 2nd edition, 1852.

[2] By French writers.

[3] As by Schleicher.

[4] As by Ascoli.

common parent-speech, the condition of the Polynesian languages 1,000 years ago must remain unknown. Much no doubt may be effected by comparing the scattered relics of these languages together, by showing that a sibilant, for instance, has been preserved in Samoan which has become a simple aspirate elsewhere, or that a guttural is retained between two vowels in Maori which has been dropped in most of the other Polynesian settlements; but to assert that some thousand years back they resembled another language to which they bear little similarity at present, would be to argue without data, and to violate the fundamental principles of comparative philology.

The object of the science of language is threefold:—

(1). It compares and classifies sentences, grammatical relations and words.

(2). It compares and classifies languages and dialects.

(3). By means of this comparison and classification it discovers the laws which govern language in general and certain languages and dialects in particular.

Thus by comparing the languages of the Aryan family we discover the phonetic law that an English *th* must always represent *t* in Sanskrit, Greek, and Latin, unless the action of other determinate laws interfere, and by comparing different groups of languages together, we find that the dual number everywhere preceded the plural. There are still many tongues in which the plural is formed by reduplication, tongues, that is, where duality, the repetition of the idea, is or has been the only conception of plurality yet reached; and others in which the number "three" is denoted by words like *prica*,

"many" (in the dialect of the Puris of South America,) expressive of vague indefiniteness, and an inability to form a clear idea of anything beyond "two." Indeed, in our own Aryan family of speech there was a time when *one*, and *two*, or that which was "divided" (δύω, δίς, διὰ, &c.) from one, were the only numerals known, and it required a fresh effort of thought to attain and conceive of a new numeral, which was accordingly named *tri*, *tres*, *three*, or that which is "beyond" (*trans*, *through*, Sansk., *tar-â-mi*, "I pass beyond").

The laws of speech may be either primary or empirical. Empirical laws are those generalizations made from the survey of a limited number of phænomena, the reason of which we do not know. All we know is that given one particular fact, another particular fact follows, or that wherever we meet with a particular class of phænomena the same generalization is sure to hold good. Thus in astronomy, Kepler's discovery that the planets move in an ellipse may be termed an empirical law, and the same may be said of the phonetic law mentioned above which obliges us to compare an English *th* with the Greek and Latin *t*. Primary laws are those higher and more comprehensive laws or generalizations which embrace the empirical laws and give the reason of them. Such a primary law is gravitation, such, too, probably is the law of natural selection. In the science of language examples of these primary laws would be the law that all language is based on roots, or the law of economy in the use of speech. The determination of the primary laws of language leads us very nearly into the charmed land of metaphysic; as the physicist with his doctrine of force

is transported out of the region of pure experiment and observation, and brought face to face with metaphysical problems, so is the scientific student of language with his doctrine of roots. Hence that part of the science of language which stands in the most direct relation with the old philosophy of speech, which would investigate such subjects as the origin of gender and case, or determine the priority of thought or language, has sometimes been called linguistic metaphysics.

When once the laws of language have been laid down we are able to apply them to our facts (that is, words and sentences), to whatever period these belong. The science of language, like all other sciences, rests upon the postulate of uniformity. So long as the conditions remain the same, the laws of the science will act with undeviating regularity. It does not matter whether the words we are dealing with are still living and spoken, or have been dead and obsolete for thousands of years; if we can show that they fall under the action of a particular law, we can apply that law to them in either case with equal certainty. When once we have ascertained that an English *d* represents a Sanskrit *t*, only those Sanskrit words which contain a *t* must be compared with English words of Teutonic origin which have a *d* in the corresponding place, whatever their antiquity may be. A knowledge that an English *d* answers to a Sanskrit and Latin *t*, and an English *h* to a Sanskrit and Latin *c* (*k* or *'s*) shows that the English *hundred* has the same origin as the Latin *centum*, and the Sanskrit *'satam*, and that, consequently, our linguistic ancestors were able to count as far as one hundred before they sepa-

rated from each other, the one to conquer India, the other to occupy Europe. Words, in fact, are like the fossils of the rocks; they embody the thought and knowledge of the society that first coined and used them, and if we can find out their primitive meaning by the aid of the comparative method, we shall know the character of the society that produced them, and the degree of civilization it had attained. The palæontologist can reconstruct the animal life of the past ages of the globe with no greater ease than the comparative philologist can reconstruct the life of bygone and forgotten communities. If the fragment of a fossil bone can tell us the history of an extinct world, so, too, can the fragment of a word reveal to us the struggles of ancient societies, and ideas and beliefs that have long since perished.

But the laws of a science must be verified before they can be accepted as such. However brilliant or ingenious a hypothesis may be, it remains a hypothesis, more or less probable, until it has been verified by experiment and observation. It is to history, to psychology, and to physiology that the science of language has to look for the verification of its laws. In the phonautograph of König, or the phonograph of Edison, we can discover the very forms assumed by the waves of air set in motion by each sound we utter; and the first lessons of psychology confirm the conclusion of glottology, that the concrete precedes the abstract. Sometimes it is not so much the law, the generalization itself, that can best be verified; but the application of it to the phænomena of speech. Thus, a sound application of the laws of language makes it clear that the words pos-

sessed in common by Spanish and Arabic are not due to a common ancestry, but to contact between the two tongues, and the history of the Moorish conquest of Spain confirms the conclusion.

But we may ask, What is meant precisely by that comparison of words and sentences on which the laws of language are said to rest? A word, a sentence, a grammatical form, consists of two elements, one, the articulate utterance, the other, the signification or thought which the utterance symbolizes. Sound and sense are the two factors which make up speech, and it is, therefore, in respect of both sound and sense that our comparisons have to be made. Comparative philology divides itself into phonology and sematology, to which, perhaps, we may also add morphology. Phonology is the science of sounds, sematology the science of meanings, and morphology the science of grammatical forms. But inasmuch as grammatical forms are but a combination of the relations of the sentence (or rather of the meaning those relations convey to the mind) and of the phonetic sounds by which they are expressed, morphology may be strictly included partly under phonology, partly under sematology. We must never forget that the study of sounds is intended to be the vestibule through which we approach the thought within. The phonological investigations we carry on, the phonological laws we formulate, are the outworks by which we may storm the fortress of the inward signification. They enable us to trace to a common source words that have flowed through diverse regions, or to discover the origin of some strangely-changed form of grammar, but the value they

possess is the value that belonged to the magic ring of the Nibelungs: it gives access to the treasure, but is not the treasure itself. Phonology is not commensurate with comparative philology, as seems sometimes to be thought. It forms but one side of the science, the instrument by which we discover the true force and meaning of sentences and words.

As the instrument of linguistic science, however, phonology is of the highest importance. In fact the modern science of language is wholly based upon it, and that which distinguishes comparative philology from the abortive attempts of former centuries is its scientific investigation into the laws of articulate utterance and of phonetic change. Here, and almost here only, we can as yet trace the nature and working of the laws of speech. It is only because we know that an English *h* and *d* must answer to a Sanskrit *ḱ* (*ś*) and *t* that we are able to assert that the primitive Aryan community had attained the conception of "one hundred." Sematology is still in a far more backward state; its laws are still a subject of investigation, and the differences of opinion that exist as to some of the great questions of linguistic science show only too plainly how much in this department of it still remains to be done. But the relative position of phonology and sematology is, after all, but natural. Phonology deals with the outward and physical, that which can be weighed and measured, and imitated by mechanical contrivances; sematology belongs to the inward and the spiritual—to that realm of thought, in short, which can only be examined in so far as it makes itself accessible to the inspection of the

senses, and submits itself to the action of physical laws. Thought seems infinite, manifold, and free, determining and determined by itself. Like the wind, it "bloweth where it listeth;" we hear "the sound thereof, but cannot tell whence it cometh and whither it goeth." All the capriciousness and complex mobility of the individual appears to belong to it; we may formulate the laws of thinking, but not of the forms which that thinking takes. The vocal organs, on the other hand, through which thought becomes realized in speech, are subject to all the conditions of the material world. The utterance of each articulate sound and its relations to another are conditioned and defined by the physical constitution of man, by the circumstances in which he finds himself, and by measurable laws of sound. The outward form of language, the flesh-garment, as it were, in which thought clothes itself, falls entirely into the domain of physiology and acoustics. Here we can observe and experimentalize, can weigh and measure, can even reproduce artificially for ourselves. Every consonant and vowel can be accurately determined, the machinery and effort needed to produce them precisely known, the variations they are capable of exactly ascertained. But when we turn to the informing thought, to that inner essence which gives life and reality to each modulation of articulate sound, all appears different. What wonder that the science of significations should be so far behind the science of sounds?

Let us not forget, however, that thought, in so far as it finds its expression in language, is not so infinitely free and capricious as we might at first sight suppose. The

very fact of its finding expression in language, that is, of being embodied in articulate sounds, implies restraint and submission to conditions. Thought is thus, as it were, arrested and crystallized; it is only gradually and in consequence of ascertainable causes that the signification attached to a particular sound or group of sounds comes to be changed. That these sounds should symbolize certain ideas is, after all, a matter of convention; it follows from the tacit agreement, not indeed of isolated individuals, but of individuals as forming a society. Changes, therefore, in the signification of words and sentences can only result from causes which affect the whole society, and as such causes necessarily work slowly and by degrees, significant change can accordingly be brought under the action of general laws. But these laws can only be established by the help of phonology: until we know what words and forms the laws of phonology will allow us to compare together and refer to a common origin, we cannot begin to discuss the genesis and history of the significations they bear. No doubt structure, that is, the conception of the sentence formed by a language, and the order in which the several parts of a sentence are arranged, is a very important element in the classification of languages; still it is only one element, and unless phonology prove that the roots and derivatives of two idioms are related, no amount of structural similarity will justify us in deriving them from the same stock.

Phonology, then, is the key and mainstay of modern linguistic science; it guarantees the correctness of the results already obtained, and is the indispensable preliminary to future researches. As will be shown in a later

chapter, our knowledge of sounds and their laws is now tolerably complete. So, too, is the application of this knowledge to certain groups of language. The phonological laws of the Aryan family, for instance, are pretty well ascertained; we know what sounds in one member of the family answer to other sounds in another member, and what particular changes of sound are permissible within each of the several members themselves. It follows from the physical formation of the organs of speech that the various sounds capable of being articulated are limited in number. Prince L.-L. Bonaparte has enumerated as many as 385, though some of these are not to be met with in any known language or dialect.[1] The number of different sounds occurring in any single language is not large among European languages; for instance, Modern Greek, Spanish, and Illyrian have but five vowel-sounds, while Gaelic, which has the largest number, possesses twenty-one, Portuguese and English following next with nineteen a-piece. So far as consonantal sounds are concerned the number tends to diminish with the culture and age of a language, and the evidence of facts is against identifying the hypothetical alphabet to which the sounds of the various Aryan dialects can be reduced with the actual alphabet of the parent Aryan speech. The physical formation of our vocal organs, due to climate, food, habit, and inherited aptitudes, obliges us to pronounce in a particular way. There are sounds, for instance, which birds and animals can make, but we cannot; while nothing is

[1] In A. J. Ellis: "Early English Pronunciation," pp. 1293-1307, 1352-1357.

harder than to catch and reproduce the exact pronunciation of a foreign tongue. The Polynesian turns David into *Raviri*, Samuel into *Hemara*, London into *Ranana*, and Frederick into *Waratariki*, and the word *steel* has been adopted in the Sandwich Islands in the shape of *tila*. It has been said that a foreigner can never speak another language so perfectly as to conceal all traces of his origin, and though this is going too far, it is quite certain that there are languages the pronunciation of which can never be thoroughly acquired after the age when growth has ended and the organs of speech have ceased to be plastic. There are numerous sounds which particular races or individuals are unable to imitate successfully; and those who have watched the attempt of children to learn their mother-tongue know how slowly some special sound is often acquired, and how in some cases it is never acquired at all. The sound which one person will pronounce as *r* will be pronounced *l* by another. Thus, the Chinese change every *r* into *l*, and the nearest approach they can make to the pronunciation of *Christ* is *Ki-li-sse-t(ŭ)*. The Japanese, on the other hand, cannot manage *l*, and in their mouths accordingly *idolatry* becomes *idoratry*. The native children of Bengal, quick as they are in other respects, seldom pronounce rightly those English words which begin with a sibilant and a mute when a consonant precedes them, *ten stamps*, for instance, being made into *ten-y-stamps*, and *this string* into *this-y-string*. The same sound which is pronounced without difficulty in certain combinations may be a hopeless puzzle in others, and the English tourist who mispronounces *Boulogne* and *Cologne*, will yet ask for an *onion*

and talk of a *barrier*. No individual, it would seem, pronounces all his sounds exactly like his neighbours, and even the same individual will vary his pronunciation of the same word in the course of a few seconds. Variations of pronunciation, in fact, are like the variations we observe in plants and animals, and if any variation becomes marked and is rendered popular and general from some cause or other, it brings about an alteration in the form of words. Such alterations resemble new species in natural history, and we may compare the different species of pigeons or dogs with the differences of pronunciations given by different dialects to what was originally the same sound. Changes in the pronunciation of words are constantly going on, causing a language to alter its form and appearance or to branch out into dialects. As these changes are determined by circumstances and physical necessities, and not by the arbitrary will of the individual, the laws they follow can be discovered and laid down. The laws once known, we can tell what words and sounds in different dialects, or in the different periods of the same dialect, may be compared together and referred to a common source, supposing, that is, that the significations they bear allow us to ascribe the identity of their phonetic elements to anything more than coincidence. The laws of phonology enable us to assert that the Greek *καλός*, and the English *hale* or *(w)hole*, may be traced back to a common origin so far as their outward crust and garment—the phonetic sounds of which they are composed—is concerned; it then remains for sematology to decide whether the ideas of "beauty" and "soundness" can be connected together. Distinctions between sounds

must be studied in spoken languages, and we must not forget that it is always very difficult to discover what was the *exact* sound attached to a word no longer spoken, but preserved only in the custody of writing.

Different tribes and races vary much as to the sounds which they find it easy or hard to pronounce and imitate. A sound which has been changed into a certain other sound in one language, may have been preserved or changed into quite a different sound in another language. In our Aryan group the palatals were originally gutturals; in Malayan, on the contrary, dentals. Because our Teutonic forefathers turned *k* into *h*, we must not conclude that such a change was possible all over the world, and that wherever we come across an *h* we are at liberty to assume an earlier *k*. Indeed, there is clear evidence that in some languages *h* may become *k*. The phonetic laws which hold good of one group of languages, or of one member of a group, do not necessarily hold good of another.

In comparing languages we have first to compare their grammars, not their vocabularies. The reason of this is obvious. It is in the sentence, not in the isolated word, that languages agree or differ, and grammar deals with the relations that the several parts of the sentence bear to one another. Single words may accidentally resemble each other in both sound and sense, and yet belong to languages which have nothing in common. In the Quichua, or dialect of the Incas, three words—*inti*, "sun;" *munay*, "love;" and *veypul*, "great"—resemble the Sanskrit *indra*, *manyu*, and *vipula*,[1] but this is the

[1] Humboldt's "Travels," Engl. Tr., i. p. 322.

only likeness that can be detected between the two tongues. So, too, the Mandshu *shun*, "the sun," coincides in sound and meaning with the English word, like the Mandshu *sengi* and Latin *sanguis*, "blood," or the North American Indian *potómac* and the Greek ποτάμος, "river." Such accidental coincidences turn up all the world over. The number of articulate sounds used in actual speech is, after all, not so very large, nor also the number of different ideas needed by primitive man; and when we bear in mind the probable onomatopœic origin of the greater part of our vocabulary, it is not wonderful that these coincidences should occur. Indeed, the wonder would be if they did not. But a coincidence of this sort is one of the surest evidences we can have that the words which seem to resemble one another have no connection whatsoever. As Professor Max Müller has said, "sound etymology has nothing to do with sound." Language is continually changing; and as the phonetic and significant changes in it are occasioned by outward conditions and circumstances which vary from age to age and from country to country, they must necessarily take a different direction in the mouths of different speakers. The very fact that the English *call* and the Greek καλέω have almost every letter in common, ought to have raised a presumption against their identity, even before the law was known that an English *c* answers to a Greek γ, and a Greek κ to an English *h*, and that, consequently, the true Greek representative of *call* is γηρύω, and the true English representative of καλέω is *hail*.

But if we are not to compare words of the same sound and sense together, how, it may be asked, are we to ascertain

the relationship of two or more languages, and discov what sounds correspond to each other in them? Our onl guide is grammar. If we find that two languages expre the relations of grammar in the same way, and by the hel of the same machinery, we may conclude that the tw languages come from a common source, and, therefor possess a common stock of words. Under grammar wi also be included structure—that is to say, the order an position of the parts of the sentence, as well as the con ception of the sentence itself. Grammar and structur therefore, are the clue by which comparative philolog must be guided in its researches. It was the neglect c such a clue that caused Latin and Greek to be compare with Hebrew, and made the etymological dictionaries c the last century a rubbish heap of wasted labour. Thos languages only which agree in their way of viewing th relations of thought can be grouped together. Whe once agreement in grammar and structure has deter mined the probable connection of two tongues, the aid c phonology may be called in to complete and verify th inquiry. Where the grammars are really connected, w may feel quite certain that there will be a community c roots. Where, on the contrary, there is no connectio between the grammars, a community of roots must b due to accident. What proved the existence of an Arya family of speech, and thereby founded comparative phil logy, was not the resemblances between individual wor striking as these were, but the exact correspondence b tween the grammatical forms of the several members the family. The lists of words drawn up by Sir W. Jon by Adelung, or by Vater, remain mere literary cur

sities. The comparative philology of Aryan speech was really created by the comparative grammar of Bopp. When once the grammatical relationship of the Indo-European languages had been established, there was a solid basis for phonology to work upon, and it was not long before Grimm discovered the laws which regulate their interchanges of sound.

But in comparing grammar and structure, we must be careful to exclude the accidental, or rather the phænomena due to the peculiar circumstances in which an individual tongue has been placed. We ought to be able to trace the history and development of each special language as far back as possible, ascertaining its oldest forms and noting the successive changes they have undergone. For this purpose it is necessary that the language should be a literary one, and that the various phases of its growth should have been preserved on monuments or in books. Where this is not the case, we have to fall back upon a simple comparison of existing dialects, and endeavour to restore from these the common forms to which their variant derivatives seem to point. The greater the number of dialects the more satisfactory will be the results of our comparison; accidental resemblances will be better eliminated, and intermediate forms are more likely to be preserved. Where the dialects to be compared are few, we have to contend against one of two difficulties—either the differences between them are so slight—as in the case of the Semitic languages—that the parent-speech from which they branched off must be too recent to throw any light on its earlier history and relationships; or else the differences

are so great, the time during which they have be separated so considerable, that the links have been lo by which we may connect them together and redu them to a single origin.

Phonology requires a knowledge of the past histor and development of the languages it deals with eve more than the study of grammar. In the comparison o words we may lay down the general rule that roots anc not derivatives should be compared together. We should trace the history of the words we examine as far back as may be, should reduce them to their simplest forms, and strip off the accretions that have grown round them like the lichen round the stone. Words derived from the same radical will often assume different forms in different languages, or even in the same dialect; while words derived from different radicals will, on the other hand, assume the same form in different languages, or even in the same one. *Captive* and *caitiff* have the same origin in the Latin *captivus; sound* may be either the Latin *sonus* or *subundare*, or the Anglo-Saxon *sund*, "hale," or *sund* from *swimman*. The American *potómac*, quoted above, is a compound, while the Greek πόταμος comes from the root πο-, which we find in πίνω and πότος, in the Sanskrit *pânam*, "a drink," and our own *potion*. The lexicographers who have declared *monkey* to be a corruption of *mannikin* were little aware that the word is really the Italian *monichio*, the derivative of *monna*, and that *monna*, again, is a contraction of *madonna, mea domina*. Before we know the history of a word, we must not venture to compare it with another, though it may happen that the history will be learnt through the process of comparison itself. Thu

we know that the Gothic *fimf*, "five," has lost a guttural, as well as a final labial, from the analogy of the Latin *quinque* (for *quinquem*), the Sanskrit *panchan* and the Lithuanian *penki*, and we can thus trace it back to the period when the Aryans of Europe and of Asia were still undivided. But at this point our materials fail us. We may feel pretty sure that *quemquem*, the original Aryan word for "five," is a simple root, and that its numerical meaning is a derived one; we may even hazard the guess that it has been formed by reduplication, but beyond this a sound method of etymology cannot go. To connect it with the Semitic *khâmésh*, as Ewald has done, is to violate the rules of comparative philology. We know the history neither of *khâmésh* nor of *quemquem*.

In comparing words together, it is safest to begin with two classes of words, those which, like the numerals, have acquired a fixed and arbitrary meaning, and terms of relationship and every day use. In the case of the former, the signification, once fixed, remains unaltered, however much the phonetic crust of the word may change, while new names are less likely to come into vogue; in the case of the latter, the very frequency of their use tends to keep them in existence. If a few families here and there adopt new modes of expression, still it may be expected that the larger part of the community will be more conservative. Hence, when we find two languages agreeing in their numerals and words expressive of common objects and ideas, we may infer that they are related to one another. The pronouns are not so sure a criterion, as they have generally been worn down by constant use

to monosyllabic forms, while their antiquity prevents us from discovering their true history and origin. Like the names of "father" and "mother," moreover, the first and second personal pronouns show a tendency to be represented in most languages by the simplest and earliest sounds uttered by the child.

The laws of phonology must be established by as large a number of instances as possible. In no other way can the chances of accident or mistake be avoided. A law, in fact, must hold good of all the phænomena that are summed up under it, and the more numerous the phænomena, the wider and more firmly established will the law be. Grimm's laws of the interchanges of sound in the Aryan family of speech depend on the observation and comparison of a very large number of words. As soon as it was found that English words which contained a *th* answered in signification and general form to Latin and Greek words which had a *t* in the same place, it was possible to formulate the law: English *th* = Latin and Greek *t;* all that remained was to verify the law by fresh instances, and in this way to strengthen the proof of the connection of the two languages. If it could be shown that real exceptions to the law occur which are not due to the interference of other laws, the law would have to be given up, however numerous might be the apparent instances on which it rested. The progress of comparative philology is continually strengthening its phonological laws and adding to their number.

The intimate connection of sound and sense must never be lost sight of in etymological research. They are as it were the outer and inner sides of the same object.

Where the significations are unrelated, we cannot connect two words which agree in phonetic sound any more than we can connect two words of the same signification but different sound. In our own group of tongues the two separate roots *dhā* "to suck," and *dhā* "to place," for example, are identical in sound; and if we turn to languages like Chinese or Ancient Egyptian, we shall find numberless cases in which the same word, so far as pronunciation is concerned, has a variety of unallied meanings like our English *box* or *scale*. Of course, it is not necessary that the signification of the words we compare should be exactly the same; the signification of words changes as much as their outward phonetic form; but we must be able to show that one meaning is derived from the other, or from a common parentage, just as we show that one sound is derived from another or from a common source.

For the purposes of phonology more especially, the study of living spoken dialects is indispensable. No doubt the historical character of glottology requires us to investigate the records of extinct languages with as much care as the facts of living ones, and it is only by learning what a language once was that we can properly know what it is now. Nevertheless, it is only in the modern languages that we can discover the nature and laws of pronunciation; it is only here, moreover, that we are brought face to face with the problems and realities of speech. The biologist, it is true, cannot dispense with the aid of comparative anatomy, but his primary object is the study of the living organism. What has been termed "antiquarian philology" has sometimes stood in

the way of scientific progress; sounds have been confounded with letters, and words instead of sentences have been made the units of speech. Antiquarian philology, furthermore, still has the shadow of classical scholasticism hanging over it; it will need a long education before the world is disabused of the idea that superiority in literature means superiority in language, and that a scientific study of language is identical with the old-fashioned "philology" of the classical scholar. Before the forms of an extinct speech can be made available for scientific investigation, they must be revivified by the translation of their written symbols into phonetic sounds, and how hard such a task is need not be pointed out. If we wish to work back to the former pronunciation of a language we must start from its modern and actual pronunciation, and in spite of all that we can do, in spite of slow and patient induction and a careful weighing of the facts, our conclusions will be at the best imperfect and approximative. The older and more scanty the remains of a language, the more defective and uncertain will be our restoration of its pronunciation. In the larger number of cases we have to be content with merely approximative results. What Mr. Ellis and Mr. Sweet have done for the pronunciation of early English, is due to the abundance of the data and the unbroken tradition which they embody; to restore the pronunciation of Latin is a work of greater difficulty, to restore that of ancient Greek of greater difficulty still. In short, the records of dead speech must be interpreted by the facts of living language, just as the conditions which brought about the deposition of the rocks can only be explained by the

forces still at work upon the surface of the globe. Here as elsewhere in science, we must proceed from the known to the unknown. The laws of consonantal change laid down for Latin and Greek, for Sanskrit and Zend, for Keltic and Old High German, receive their verification and explanation from the Romance dialects of modern Europe; while it is in the study of savage idioms, in the languages of Bushmen and of Kafirs, of North American Indians and of Papuans, that some of the most precious facts of linguistic science have been obtained. An extinct literary language, indeed, is by its very nature less serviceable to the comparative philologist than the artless jargons of barbarous tribes. It is artificial rather than natural, and the product of individual idiosyncrasies rather than of the whole community. The further removed it is from the fresh current of living speech, the less capable it becomes of strictly scientific treatment. The individual element, with all its arbitrary capriciousness, has entered too largely into it. The grammatical forms invented and enforced by ignorant grammarians, the words coined after false analogy by the Homeric rhapsodists and their successors, or the stilted phrases and inverted expressions employed by a particular writer and his imitators, all belong to the domain of the "philologist" rather than to that of the scientific student of language. He has nothing to do with textual criticism or the study of style, much less with the successful reproduction of the idiosyncrasies of classical authors.

Philology in the narrower sense of the term has to prepare materials for comparative philology in so far as the latter is concerned with literary languages or dialects. In

its turn it is guided in its researches and kept within the limits of scientific accuracy by comparative philology which tests and rectifies its conclusions, and prevents for the future attempts like that of Buttmann to derive ἄφνως from ἄφθονος or that of K. O. Müller to extract πελασγός from πελαργός. The particular can only be understood in the light of the universal, and as long as we are dealing with one language only our comparisons must be limited to that language alone at different stages of its growth, and will consequently sometimes lead us astray. Error can only be avoided by making our field of comparison as wide as possible, and so bringing our theory to the test of the greatest possible number of facts. It is evident from this, however, that the comparative philologist will have a special and minute acquaintance with but a few out of the many facts which come before his view. The memory even of a Mezzofanti is limited, and the ordinary student of language must be content to derive from others a large proportion of the materials on which he works. Caution in the choice and use of his authorities is here absolutely requisite, and it ought to be the business of the specialists in each language to see that the facts presented to him are thoroughly accurate and exact. Their work is the foundation upon which the structure of comparative philology has to be built.

But the comparative philologist cannot dispense with a specialist's knowledge of at least two languages. In no other way can he have that intimate acquaintance with the inner life of speech requisite for his studies, or possess the necessary instinct for selecting the right authorities to whom to trust when dealing with tongues

with which he is unacquainted. The more languages he knows thus thoroughly the better, especially if these belong to different classes of speech. Unless the Aryan scholar is acquainted with a Semitic language, his theory of flection is likely to be one-sided and faulty, and unless he have a further knowledge of some agglutinative dialect, his views on the relation between flection and agglutination must be received with a certain amount of distrust. Grammars and dictionaries will not give us that grasp upon the inner structure and spirit of a dialect which is all-important in determining some of the chief problems of speech. They present us only with the external facts of a language: before we can *think* in it, before we can place ourselves in the mental attitude of its framers and speakers, we must be saturated with it, as it were, and have that knowledge of it which can only come from daily and constant use.

At the same time, it must not be forgotten that the comparative philologist should not introduce the frame of mind of the specialist into his comparative inquiries. The specialist who takes up comparative philology as a subsidiary pursuit is likely to spoil it in the taking. The minor details of his special subject, whether it be Greek or Sanskrit or Hebrew, will assume an unreal importance in his eyes, and the main phænomena to which his attention ought to be directed will be correspondingly dwarfed. Bopp was the father of comparative philology simply because he was not a specialist in any one of the Aryan languages; had he been a Sanskritist, and nothing else, he would doubtless have produced an excellent Sanskrit grammar, but not the

famous text-book of scientific philology. The errors into which he fell have since been corrected by the special students of the various languages he handled so freely: the knowledge he acquired of them was sufficient for the great purpose he had in view, and an exhaustive study of any one of them would merely have consumed the time and energy which were needed for his other work.

We can now see clearly what is the object and scope of the science of language. It has to do with language in all its forms as the significant utterance of society. Where utterance ceases to be significant, the science of language also ceases to investigate it. Beyond the barrier of roots it is unable to pass; other sciences—ethnology, psychology, physiology—must be called in if we wish to know what lies beyond that barrier, what, in short, were the inarticulate utterances and gestures which gave rise to articulate speech. Glottology has to investigate the origin of language so far as it is really language, but no further. By the use of the comparative method, words, forms, sentences, dialects, and languages are classified and traced back to their most primitive form, and the laws which govern their development and relationships determined and explained. In this work of comparison, phonology and sematology ought to go hand in hand, since language consists in the intimate union of sound and thought; but inasmuch as the facts and laws of phonology can be more readily discovered and tested than those of sematology, it is necessary that our linguistic researches should have their starting-point on the phonological side. Inasmuch as language is the

reflection of the thought of a community, the history of words and forms, as determined by the application of the laws of glottology, will be also the mental and spiritual history of the community that used them. Like the geologist, therefore, who can reconstruct the material history of the earth and restore the various forms of life that have successively peopled it, the scientific student of language can read the past history of human society in the fossil-records of speech. By tracing the Greek δῆμος to the root δα, "to divide," he can show that private property in Attica originated in that allotment of land by the commune which still prevails among the Slavs, while not only the existence but even the mode of life and intellectual horizon of the primitive Aryans has been revealed by comparative philology with more certainty and minuteness than could have been done by any chronicle, however perfect. But perhaps the most important of the results obtained by the application of the comparative method to language, has been the light thrown upon the origin and nature of mythology and the history of religion. Two new sciences, those of comparative mythology and comparative religion, have grown up under the shelter of glottology, and form subordinate sciences dependent upon it. In the more immediately practical sphere of education, again, the science of language has lightened the labours of the learner by explaining the reason of the rule while it insists upon the reversal of the old unscientific mode of teaching languages by beginning with the dead ones, and points out that the method of science and of nature alike is to proceed from the known to the unknown. By breaking

down the prejudices that have so long maintained our present cumbrous and inaccurate spelling, it is preparing the way for a reform in that direction, with its consequent saving of time and labour, while the construction of an universal language is the aim towards which its students ultimately look.

But meanwhile, though much has been accomplished, much more still remains to be done. Comparative philology and the science of language are not yet a century old, and the problems of speech that still await solution are many and important. The previous chapter will have shown how various are the opinions still held as to the nature of language and its science, while the belief that the exceptional—we might almost say abnormal—Aryan family of speech is the type and rule of all others still unconsciously influences a large amount of philological reasoning. Is the science of language a physical or a historical one? Did roots constitute a spoken language or are they phonetic types which never entered into actual speech? Have isolating languages become agglutinative and agglutinative languages inflectional? Do dialects precede the common language or does the common language precede dialects? Have the languages of the world been all derived from one or two primitive centres or do they point to an infinite diversity of origin? Such are some of the questions which still await an answer, and the answer requires more investigation, more patient observation and induction, and, above all, more labourers in the field of research.

## CHAPTER III.

### THE THREE CAUSES OF CHANGE IN LANGUAGE.

"Πάντα ῥεῖ."—HERAKLEITUS.

SCIENCES may be classed as historical or physical according as they deal with the mind of man or with external nature. The forces and materials of nature remain always the same: oxygen and hydrogen, for instance, are in no way different to-day from what they were a million of ages ago, and, combined in the same proportions, would always have produced water. Man and his intellectual creations, on the other hand, have a history; that is, the same causes do not always act in the same way, nor do the causes themselves always remain the same. The sum of the forces set in motion by the human will goes on increasing in an accelerated ratio: each new generation is influenced and moulded by the one that preceded it, and that influence becomes itself a fresh factor in the sum of the forces and causes at work. In place of the simpler processes of nature, with their unvarying uniformity of action, we have an infinitely complicated *development*, each stage of which is the immediate growth of the previous one, and is in turn the origin and germ of all

that are to follow. Unlike the forces and phænomena of nature, thought is infinitely progressive, for

> "through the ages one increasing purpose runs,
> And the thoughts of men are widened with the process of the suns."

Wherever we have to deal with the products of human thought, there we have a constant ever-varying evolution, conditioned, it is true, by the uniform laws of outward nature, but continually modifying and adapting them. It is through the conditions thus imposed on the development of thought that we can discover the direction it has taken, and our inquiry thus becomes in great measure a historical one. We have to see under what conditions, in what external shape, as it were, the development of thought has displayed itself at each particular stage of its progress.

Like sociology, or comparative law, the science of language is concerned with a product of the human intelligence, and must consequently be included among the historical sciences. Language, we have seen, is significant sound; sound without significance is not yet language. As it is the inward sense and meaning, therefore, which constitute the essence of language, the primary object of comparative philology ought to be to discover the nature, origin, and history of the signification we breathe into our words and sentences. This can only be done, however, by finding out the conditions under which this signification is put into them, and by questioning the external side of language, those articulate sounds, namely, whereby we communicate our meaning to another. Now the external side of language is purely physiological and governed accordingly by purely physical laws. Phonology, in short, is as much a physical science as sematology is a historical one; and if we claim

for the science of language in general the rank of a historical science, it is only because the meaning, rather than the sound, is the essence of speech, and phonology the handmaid and instrument rather than the equivalent of glottology. The method pursued by the science of language is the method of physical science; and this, combined with the fact that the laws of sound are also physical—the same conditions producing the same sounds in all periods of human history,—has occasioned the belief that the science of language is a physical science. But such a view results in identifying phonology and glottology, in making a subordinate science equivalent to the higher one, and in ignoring all those questions as to the nature and origin of language which are of supreme importance to the philosophy of speech. If we treat glottology as a physical science we must content ourselves with an exposition of the laws of sound and a mere description of the languages of the world and their classification, so far as it is founded on phonology alone. It is evident that such a classification must be superficial and incomplete; the relationship of languages is primarily based on grammar and structure rather than on a community of roots, and even roots must agree in sense as well as in sound before they can be admitted in proof of linguistic kinship. The intimate and inseparable connection between the inward and the outward, between sense and sound, in articulate speech, is a symbol of the connection between the historical and the physical methods of investigating it; but inasmuch as the sense is more important than the sound, so, too, the historical side of linguistic science is more important than its physical side.

Language and languages are in a constant state of change: nowhere, indeed, can the maxim of Herakleitus, πάντα ῥεῖ, be better illustrated. This perpetual flux and change is necessitated by the very fact that language is a product and creation of the human mind. Thought is ever shifting, moving, developing, and so, too, is the language in which it seeks to embody itself. But language is not only changing on this its inner side, it changes also on its outward, its phonetic side. The physiological organs of speech may be affected by an alteration in climate, food, or other physical conditions: they are certain to be affected by the psychological desire to save trouble or to add emphasis in speaking.

The three great causes of change in language may be briefly described as (1) imitation or analogy, (2) a wish to be clear and emphatic, and (3) laziness. Indeed, if we choose to go deep enough we might reduce all three causes to the general one of laziness, since it is easier to imitate than to say something new, while clearness in expression not only saves our neighbour trouble, but also preserves us from unnecessary repetition. Nothing is gained, however, by too wide a generalization; and it is, therefore, better to keep the three causes of linguistic change distinct and separate.

Imitation has played a far more important part in the history of speech than is ordinarily admitted. Imitation is the primary instinct of the infant and the savage, and, under the name of fashion, is a ruling power among civilized men. The great imitative powers of barbarous tribes have often been remarked upon by travellers; and a marvellous facility in mimicry and imitation seems to

exist in proportion to the scanty development of the reasoning faculties. In this respect, at all events, the savage has not much ground for boasting of his superiority to the ape. Among the less cultivated races, indeed, the passion for imitation frequently passes into a morbid mania, and strange stories are related concerning it. Thus Dr. R. Maak, in his "Journey to the Amur," states that "it is not unusual for the Maniagri to suffer from a nervous malady of the most peculiar kind, with which we had already been made acquainted by the descriptions of several travellers.[1] This malady is met with, for the most part, amongst the wild people of Siberia, as well as amongst the Russians settled there. In the district of the Yakutes, where this affliction very frequently occurs, those affected by it, both Russians and Yakutes, are known by the name of *Emiura;* but here the same malady is called by the Maniagri *Olon*, and by the Argurian Cossacks *Olgandschi*. The attacks of the malady which I am now mentioning consist in this, that a man suffering from it will, if under the influence of terror or consternation, unconsciously, and often without the slightest sense of shame, imitate everything that passes before him." So, too, Mr. Jagor, in his "Travels in the Philippines,"[2] tells us that the malady in question is well known in those islands under the name of *Mali-mali*, and in Java under that of *Sakit-latar;* and goes on to relate how his "companions availed themselves of the diseased condition of a poor old woman who met us in the highway, to practise some rough jokes upon her.

[1] Compare A. Erman: "Journey round the Earth through North Asia," iii. § 1, p. 191.

[2] P. 159.

The old woman imitated every motion as if impelled by an irresistible impulse, and expressed at the same time the most extreme indignation against those who abused her infirmity." The description reminds us of the feats of our own "electro-biologists."

It is to the desire of imitation that we owe our first knowledge of our mother-tongue. The child tries to imitate those about him, and as the faculties of imitation and memory are the only ones yet developed in him his efforts are usually successful. The distance at which we stand from the infantile state, and the development of our reasoning powers, are measured by the prominence given to individuality and our power of taking the initiative. The community in which each man acts like his neighbour is not yet a civilized community; Athens is typical of all that is highest in human culture, and Athens was emphatically the State in which individuality had the freest play. It is well for the child who has to learn the language of his parents that he is rather a member of an uncivilized community than of Periklean Athens.

The love of imitation is the instrument whereby one language is able to influence another. Sometimes we find a community giving up its own tongue altogether and adopting that of his neighbours. Such has been the case with the Kelts of Cornwall, with the Wends of Prussia, or with the Huns of Bulgaria. The Negroes of Haiti speak French, the Lapps Finnish, while according to Humboldt and Bonpland,[1] "a million of the aborigines of America have exchanged their native for a European language." Social contact and not identity of race occa-

[1] v. p. 774.

sions a similarity of language, since language is the medium of communication between the members of the same community, not between the scattered branches of the same race. No doubt where the languages are essentially distinct, based on radically different conceptions of the sentence and its parts, even the desire of imitation will be often not strong enough to cause the one language to be borrowed by the speakers of the other. Here and there we come across children who have a difficulty in imitating the pronunciation or use of the words they hear, and such a difficulty is a main cause of the origination of dialects; but it is among the speakers of agglutinative or polysynthetic tongues when brought into contact with an inflectional language that the difficulty is best exemplified. The Negro of the United States still speaks a jargon which can be called English only by courtesy, and Humboldt states [1] that "nothing can exceed the difficulty experienced by the (South American) Indians in learning Spanish," although they "manifest quickness of intellect" in other respects, and "the missionaries assert that their embarrassment is neither the effect of timidity nor of natural stupidity, but that it arises from the impediments they meet with in the structure of a language so different from their native tongue." Potent as imitation is, it yet has a limit, and this limit is reached wherever the element of conscious intelligence intervenes. The savage, like the child, finds it hard to mimic the products of civilized man, in so far as these embody the application of the reasoning faculties, and the mode of thought elaborated through long ages by a cultivated race necessarily forms

[1] "Travels," Engl. Tr., i. p. 310.

a stumbling-block to the Negro or the South American Chayma. The Ethics of Aristotle could not have been written in a Semitic language, and a Negro Goethe is a somewhat incongruous conception. Wherever the distance between the two languages or the two levels of culture is great enough, the attempt to imitate is either given up altogether or else becomes a failure. The modes of thought of the borrower are read into the language he borrows. The Chinaman endeavoured to assimilate English, and the result was the Pigeon-English of Canton, a jargon in which we have a framework of English reared upon Chinese grammar and Chinese pronunciation. The difficulty of reproducing a cultivated language of foreign origin, or a language based upon a wholly alien conception of things and their relations, may be illustrated by the difficulty of translating accurately books written in another tongue. However closely related two languages may be, the various shades of meaning they attach to corresponding words or idioms will necessarily differ, and the more cultivated the style of a writer, the more impossible will it be to represent it exactly in a translation.

Where a language is not borrowed bodily, or at any rate engrafted upon the old modes of thinking and expression, it may yet exercise a greater or less influence upon a neighbouring language. Words, sounds, idioms, suffixes, and even grammatical forms may be and constantly are borrowed from one dialect by another; and it is not too much to say that a thoroughly pure and unmixed language does not exist among the civilized races of mankind. Our own English is a superstructure of Norman-French and Latin upon a foundation of

Anglo-Saxon, and nine-tenths of the Hindi language is Sanskrit. No people can have neighbours close to them without receiving something from them in the shape of inventions, products, or social institutions; and these almost inevitably are adopted under foreign names. Thus the French have taken *meeting* and *comfortable* from us, and we have received *naïve* and *éclat* in return from them. Such loan-words are of great use in tracing the history and distribution of civilization, as well as the geographical and social relationships of the past. *Boomerang* proves our intercourse with the natives of Australia, from whom we have derived both the idea and the name of the weapon; *pew*, the Dutch *puyde*, *puye*, "a pulpit" or "reading-desk," from the Latin *podium*, reveals the close connection that existed between the Churches of England and Holland in the seventeenth century, while words like *maize*, *hammock*, *canoe*, and *tobacco*, derived as they are from Haytian through the medium of Spanish, show as plainly as ordinary history that the Spaniards must have been the discoverers of America and the introducers of its products into the West. By similar reasoning we infer that the Baltic provinces must have been inhabited by a Teutonic population at the time when the Romans received amber from them under the name of *glæsum* (our *glass*), and Professor Thomsen has proved that the Finns must have bordered on Scandinavians and Teutons some two thousand or more years ago from the number of words borrowed by Finnish from their languages.

Sounds, again, may be borrowed from one language by another, or native sounds modified through the influence

of a foreign tongue. The easier of the Hottentot clicks have been borrowed by the Kafirs, and the Souletin dialect of Basque has admitted the French vowel *u*. Idioms, too, may pass readily from one tongue to another. Words like *avenir* and *contrée* in French, are the result of an attempt to express German idioms in the Romance of the conquered provincials, *avenir* or *ad venire* being a literal translation of the German *zu-kunft*, and *contrée* for *contrata* (*terra*), a curious representative of the German *gegend*, "country," as derived from *gegen*, "against." The great extension of the English plural in *-s*, confined as it was in Anglo-Saxon to a comparatively few words, seems due to Norman-French influence, and the use of the genitive and dative of the personal pronouns in English "of me," "to me," in the place of the Anglo-Saxon *min* and *me*, is modelled after a French pattern. Bulgarian and Roumanian seem to have caught the infection of Albanian usage in which the definite article is attached to the end of the word, as in the Roumanian *domnu-l*, "the lord," and Persian has even adopted the Semitic order of words so repugnant to the general structure of the Aryan group, in saying *dăst-i-'Umăr*, for "Omar's hand." For instances of borrowed suffixes, we have only to point to our English *-ize* and *-ist* from the Greek *-ιζ-ω* and *-ιστ-ης*, which tend to supersede the old corresponding suffixes of the language, and the French participial termination is imitated in the letter of Gawin Douglas to Richard II. (1385), where we find such phrases as "Zour honourable lettres contenand," and "brekand the trewis."

The borrowing of grammatical forms is of much rarer occurrence, inasmuch as grammar is the essence and life

blood of language, and to borrow the forms of grammar, therefore, is to intermingle the psychological histories of two separate tongues. It is a metamorphosis of the whole inherited mode of thinking and of viewing the relations of things to ourselves and one another, and to mix two grammars together is like mixing two different and incompatible modes of thought. A supposed instance of a mixed grammar (that is, of a mixed language) generally turns out to have another explanation. Thus it has been believed that the modern Aryan languages of India have substituted agglutinated postfixes for flection, and so have adopted the grammatical machinery of their Dravidian neighbours. Thus in Gujerati, *dêv-mã̃* means "in the god," like the Hindustani *ãdhe-mẽ̃*, "in the blind," and in Nepalese *mânis-visê* is "in man," *mã̃* or *mẽ̃* being a contraction of the Sanskrit *madhyê* (=*madhya-i*), "in the middle," and *visê* of *visayê*, "in the thing." What has really happened in these cases, however, is this. The first noun instead of being provided with the locative suffix (*-i*) is compounded with another noun which still retains the suffix, and the locative signification accordingly resides not in the second member of the compound, but in its worn-away flection. Here, then, there is no example of grammatical confusion. There are other instances of "mixed grammar," however, which cannot be so easily disposed of, and it would really seem that in rare cases there actually has been an interchange of grammatical forms between two unallied languages. Thus in Assamese, which appears to be at bottom an Aryan language, the plural affix (*bilak*) is inserted between the noun and the case-ending, so that from

*manuh-bilak*, "men," we get the genitive *manuh-bilak-or*, the dative *manuh-bilak-oloi*, the accusative *manuh-bilak-ok*, the locative *manuh-bilak-ot*, and the ablative *manuh-bilak-e*, where the postpositions are all of them said to be of non-Aryan origin. The language of Harar, in Northern Africa, again, though apparently belonging to the Semitic family of speech, makes use of postpositions, and reverses the Semitic order of words when employing the genitive; while, according to Schott, the Persian affix of the dative and accusative was originally a Turanian postposition. Cases like these must, of course, be carefully distinguished from those in which we are dealing with an artificial language and not with the spoken language of the people. A curious language of this kind, the Pehlevi, was formed in the courts of the Sassanian princes of Persia, in which the elements of Aryan and Semitic grammar were mixed together in a strange fashion, but such a language did not penetrate beyond the limits of the learned class. Of the same nature are such affected plurals as *termini* and *fungi* from *terminus* and *fungus* in English, or the genitive and dative *Christi* and *Christo* in theological German. They would not be understood beyond the boundaries of a narrow circle.[1]

The most usual way in which the grammar of one

[1] So in Japan the learned class has introduced the Chinese characters under the name of Koyé or Won, and with them the Chinese pronunciation and order of words. In Koyé (that is to say in Chinese) the particles come first, then the verb, and, lastly, the case. The reverse is the case in Japanese, or when the characters are read as Yomi, that is, as ideographs standing for Japanese words. Thus, the Koyé "sed non videbo hodie illum" would have to be read in Yomi, "illum videbo hodie non sed."

language is influenced by that of another is by the adaptation of existing words and forms to express new grammatical ideas and relations imported from abroad. Thus the Assyrians became familiarized with the distinction between present and past time through their acquaintance with the extinct Accadian of ancient Chaldea, and they accordingly set apart certain separate phonetic forms, which had previously existed side by side without any difference of meaning, to express the present and the past tense.[1] So Spiegel[2] believes that he has discovered the influence of Semitic grammar in the Zend use of the feminine to denote a neuter or abstract, and of the dual to denote a pair. The invariable rule of the ancient Maya of placing the adjective after its substantive, is sometimes violated in the modern language through the influence of Castilian,[3] and the Ragusan custom of using the Illyrian *svoj*, "his own," in the place of *njegòv*, "his," is referred by Brugman to the influence of Italian and German.[4]

But the principle of imitation comes chiefly into play in the sphere of language in changing the form and meaning of words so as to bring them into agreement with the form and meaning of other words. When the true history and significance of certain forms have been forgotten by

[1] Sayce: "Journal R. A. S." x. 2 (1878).

[2] "Arische Studien," i. 2, pp. 45-61.

[3] De Charencey in the "Revue de Linguistique" (1873), i. 1, p. 57.

[4] "Ein Problem der Homerischen Textkritik" (1876), p. 95. Pott ("Wilhelm v. Humboldt ueber die Verschiedenheit des menschlichen Sprachbaues," i. p. 15) suggests that the change of the Latin demonstrative into the article of the Romance languages was due to Teutonic influences.

those who use them, other words with a totally different history and significance are very likely to be assimilated to them. When language has once created a particular mould it is very liable to run all manner of words into it. This is what is meant by the action of *false analogy* in speech. Words, forms, and significations which ought to have been kept apart are erroneously made like one another; the instinct of imitation and the desire to save trouble combine to exclude the irregular from language, and to force all exceptions under a uniform rule. The modern Greek declines innumerable words which formerly belonged to different declensions after the type of ταμίας, turning βασιλέας, ἄνδρας, and the like, into nominatives singular, and in the English which is unchecked by a literary tradition *I comed* is already more common than *I came*. Analogy is constantly at work throughout the whole domain of language—in pronunciation, in formal grammar, in syntax, and in sematology—building up and reconstructing what phonetic decay and change of meaning have tended to pull down. English is rapidly forcing all exceptional cases under the rule that throws the accent back as much as possible; *balcóny* has become *bálcony*, and Milton's line "O argument blasphémous, false and proud," would no longer scan. There is good reason to believe that the vocabulary of the primitive Aryan was for the most part, if not entirely, accented on the last syllable; the course of centuries has been continually thrusting the accent back as much as possible, and Latin and the Æolic dialects of Greece which illustrate this tendency, only show their want of conservatism and relative decay. Though the old accent of pitch

has become an accent of stress in most of the modern European tongues, the same process is still going on; and while Polish still accents its words on the penultima, the accentuation of Bohemian is upon the first syllable. The same fact reappears in the Semitic family of speech, where it can be shown that the penultima primarily received the accent, and that the accentuation of the modern Arabic which agrees with that of English is a later innovation.[1] Greek words like φύω, θύω, and τίω, where the length of the vowel compensated for the loss of an iota (*φυίω), were brought under the general rule of the language which made one vowel before another short,[2] and when Horace addresses the fountain of Bandusia as "splendidior *vĭtro*," the quantity assigned to *vĭtro*, a contracted form of *vistrum* for *vid-trum* (from the root *vid*, "to see"), arises from the mistaken notion that because a naturally short vowel could be lengthened before a mute followed by a liquid every vowel in such a position might be treated as indifferently long or short. So, again, the termination of the Latin nominative plural in *-es* was properly short, as may be seen from a comparison with the Greek; but the long vowel resulting from the combination of this termination with the final vowel of stems in *-i* (such as *nubi-es*) was extended to other cases, and the nominative plural of consonantal stems like *voc* (*vox*) was accordingly regarded as ending in a long syllable.

Apart from accent or quantity, however, the pronun-

[1] Sayce: "Lectures upon the Assyrian Grammar and Syllabary," pp. 61, 62, "Journal R.A.S.," x. 2, pp. 251, 252 (1878).

[2] *E.g.* θῦω in Od. 260, Theok. iv. 21; Aristophanes and the Attic poets preserve the long vowel.

ciation of words is largely affected by the influence of analogy. Our English preference for diphthongal sounds is changing *either* and *neither* into *aither* and *naither*, in spite of the fact that the only other word in the language by which such a pronunciation could be supported is the misspelt *height* from *high*. The Frenchman "gallicizes" the words he borrows or the proper names he uses just as the Englishman "anglicizes" his; it is easier for the one to say *Londres* and *Biarri'* than *London* and *Biarritz*, and for the other *Paris* and *Marsaels* than *Pari'* and *Marseies*. Up to the last Charles James Fox called Bordeaux wine "Bordox," maintaining that it had been domesticated in England, and ought accordingly to follow English customs. The action of analogy throws much light on Grimm's laws respecting the shifting of sounds in the various branches of the Aryan family, which will be specially treated in the next chapter. When once a particular variety of pronunciation has come into vogue it absorbs and kills all deviating modes of pronunciation as surely as the cardoon in Central America has killed the native plants in its neighbourhood. We are all creatures of fashion, and the instinct of imitation is at work from the moment we first cease to be *infants*,—"speechless" embryos of humanity.

In the matter of grammar, a familiar instance of the way in which analogy can change the current forms of speech is afforded by the extension of the English perfect in *-ed*, the last relic of the affixed *dide*, the reduplicated past tense of *do*. The Latin *amamini* is the plural masculine of the old middle participle which we find in the Sansk. *bharamâṇas*, the Greek τυπτόμενοι, and the Latin

*alumnus* (*alomenus* from *al-o*) or *Vertumnus*, the "changing" year. But when it had firmly established itself as a substitute for the second person plural of the present of the middle-passive voice, with *estis* understood, its true origin and meaning came to be forgotten, and as *amamini* was conjugated with *amamur* and *amantur*, so the anomalous *amemini* was conjugated with *amemur* and *amentur*, and *amabamini* with *amabamur* and *amabantur*. The coexistence of the older and later forms of the third personal pronoun in Greek, σφέ (Sansk. *swa*, Lat. *se*), and ἕ caused the one to be employed as a plural and the other as a singular, although the pronoun was originally reflective and of all genders; and the new plural pronoun was then provided with cases as well as with a dual formed on the analogy of those of the first and second pronouns. In the case of the dative alone a difficulty occurred, since here ἡμῖν or ὑμῖν could not be distinguished in form from σφί(ν) still used as singular by Herodotus; but the difficulty was overcome by having recourse to the noun-declension and creating a σφίσι as a parallel to ναῦσι. The contracted plural accusative πόλεις could not be derived from the original πολιας (for πολιανς) by any known rule of Greek phonology; it owes its existence to the habit of making the accusative plural like the nominative. The whole of the so-called fifth declension in Latin has grown up from the unconscious blunders of speech. *A* before *m* tended to become *e*, as in *siem* for *siam*, and accordingly by the side of *materiam* was heard *materiem*. The accusative *materiem* was then confounded with accusatives like *nubem*, and so a new nominative came into being, *materies* by the side of *materia*. Meanwhile the vowel of the

accusative case-ending had influenced the vowel of other case-endings, and changed the old ablative *mat* and genitive *materiai* into *materie* and *materiei*. The same process was next extended to the plural, *materiar* *materiabus*, and *materias* became *materierum*, *materie* and *materies*, and nothing remained but to assimi nominative and accusative as in nouns of the tl declension whose accusative plural also terminated in

Analogy will sometimes alter the whole struct complexion of a language. The Coptic, formerly affix-language like Old Egyptian or the Semitic tong has become a prefix-language, denoting by prefixes relations of grammar; and this metamorphosis se due to the influence of the neighbouring Berber cognate dialects. The tendency must have first sh itself in a few instances, and then by degrees have exten to the whole language. It has been held that the A conjugation with a vowel between the root and the su as in the Sanskrit *bhav-â-mi* or the Latin (*e*)*s-u-m*, grown up in the same manner, verbs like the San *ad-mi*, "I eat," alone surviving as the remains of a in which the personal pronoun was attached immedia to the verbal root. This, however, is very doubtful, latter class of verbs being more probably the resul phonetic decay which has obliterated the connecting vc or more correctly the final syllable of the stem.

Syntax has not escaped the all-prevailing actio analogy and imitation. The relics of English flectio rapidly disappearing under its influence, and the us the conjunctive *were* will soon be as obsolete as th *be*. The relative pronoun was originally a demonstr

like our *that*, which drew attention to the idea contained in the principal clause, but with the extension of its use as a relative its demonstrative signification was lost, and it came to be used in instances where the demonstrative could not be employed.

Examples of the power of analogy in changing and extending the meaning of words are almost needless. The process is going on before our eyes every day. A new object or a new idea is named from its likeness to something with which we are familiar. The Kuriaks call the ox the "Russian elk" (*Ruski olehn*), just as the Romans spoke of the elephant as the *Luca bos*, and we are all familiar with the significant name of the *Sugarloaf* Mountain. There is a long distance from the primary signification of *post* as something "placed" or "fixed" to its signification as the arrival of correspondence, but every stage of the way can be traced and shown to be the work of analogy. The post fixed in the ground became a station, and when such stations were established for the conveyance of messages, news was said to travel "by post." To transfer the name "post" from the machinery whereby the news was carried to the news itself was at once obvious and easy. The *foot* of a mountain is as much a metaphorical expression as the *arm* of the sea or the *arm* of law, and every metaphorical expression is an example of analogy. Three-fourths of our language, indeed, may be said to consist of worn-out metaphors. In no other way can terms be found for the spiritual and the abstract. *Spirit* is itself "the breath," the *abstract* that which is "drawn apart." Our knowledge grows by comparing the unknown with the

known, and the record of that increase of knowledge grows in the same way. Things are named from their qualities but those qualities have first been observed elsewhere. The *table* like the *stable* originally meant something that "stands," but the idea of standing had been noted long before the first table was invented. The only abstract notion the Tasmanians had attained was that of resemblance. When they wanted to express the conception of roundness they had to say "like the moon" or some other round object, and similarly in the case of other abstract adjectives.

But as in pronunciation and grammar, so too in the matter of signification the analogy may sometimes be a wrong one. The men who coined the term "whale-fishery" were ignorant of the fact that the whale is a mammal, and that its only resemblance to a fish consists in its living in the sea. The name of *guinea-pig*, again, as applied to the small animal imported from Brazil, is singularly inappropriate. At other times the process whereby a new idea or object has been brought into relation with what was already familiar has been fair and legitimate. Thus the sense of the French *canard* as "idle gossip" can be traced back step by step to the primary meaning of the Low-Latin *canardus*. The feminine of *canard* is *cane*, and just as *cane* is the German *kahn*, "a skiff," so *canardus* properly signified "a small boat." Then by the force of analogy the words came to denote "a duck," and as the duck was frequently used to decoy other birds by its cry, *canard* ended in signifying a mere decoy, a mere empty cry calculated to deceive.

Mythology, as we shall see hereafter, is in large measure

based upon the metaphors of speech. The phænomena of nature were explained by likening them to those human actions with which primitive man was acquainted, and when in course of time a higher level of knowledge had been reached, and the original meaning of the traditional epithets had been forgotten, they came to be taken literally and interpreted as referring to beings of a superhuman world. The dawn had been likened to a rosy-fingered maiden, the sun to a charioteer, and so the myths of Eôs, the ever-fleeing maiden, and of Phœbus Apollo, the heavenly charioteer, came into existence. Mythology is not so much a disease of language as a misunderstanding of its metaphors and a misconception of the analogical reasoning of our early forefathers.

Exactly the converse of this are those popular etymologies whereby words whose meaning is unknown or forgotten are assimilated to others with which the speakers are familiar. A gardener has been heard to call *asphalt* "ashes-spilt," and thus render an explanation of the word to his own mind, and the modern spelling of the German *sündfluth* is due to the popular belief that the word, really a compound of *sint*, "great," the Anglo-Saxon *sin*, "everlasting," was invented to denote the deluge of Noah, which punished the "sins" of mankind. Luther still writes *sindfluth* (*sindefluth*), and in his translation of the Bible uses it in other passages besides those which relate to the Noachian flood (*e.g.*, Ps. 29, 10, and Sirach 39, 22). Proper names have naturally suffered, especially from the attempt to give a meaning to them. Burgh de Walter has become Bridgewater and Widder Fjord, "the Creek of Wethers," Waterford. The name of Madrid is ex-

plained by a popular legend which makes a boy, pursued by a bear, fly to a tree and cry to his mother "Madre id, Madre id ("Mother, he comes");[1] the Lepontii, we are told by Pliny,[2] received their title from having been the companions of Hercules who were "left behind" (λιπόντες!); and the Kirgises were so named from forty maidens, the mothers of the race, *qyrg* being "forty" in Turkic and *qyz* "a maiden."[3] Similarly the modern Greeks have changed the meaningless *Athens* into Ἀνθῆναι, "the Flowery," while Krisa has become Χρυσό, "the Golden."[4] Where all other means failed the name was explained by the clumsy device of turning it into the name of an individual, and so there arose those eponymous heroes like Hellen and Asshur from whom tribes and nations were supposed to have been designated. The same process of etymologizing by the help of false analogy meets us in literature as well as in popular speech. The Homeric Poems are full of instances of the fact. In the Odyssey the old epic epithet ἐπηέτανος, "long lasting" (from ἐπὶ, ἄει, and τείνω), has come to be derived from ἔτος, which had lost its initial digamma (ϝετος, Sanskrit *vatsas*), and is accordingly employed in the sense of "lasting all the year," while the Aorist infinitives χραισμεῖν and ἰδεῖν were taken to be presents and so provided with the futures χραισμήσω and ἰδήσω. Our own absurd mode of spelling presents us with parallel cases. Because *should*, the past tense of *shall*, has an *l*, *could*, the past tense of *can*, is given one; and *further*, the comparative

[1] Hackländer: "Ein Winter in Spanien" (Werke xxii.), ii. 78.
[2] N. H., iii. 20, 24.
[3] Schott: "Abh. der Berlin. Akad." (1865), p. 440.
[4] Deffner: "Neograeca" in Curtius' "Studien," iv. 2, p. 307.

of *forth*, has been written and pronounced *farther* as if derived from *far*.

The desire of clearness and emphasis, the second cause of change in language, is, like analogy, a creative and constructive power, and is often found at work in company with analogy. The object of speech is to communicate our thoughts to one another; where, therefore, our meaning is not clearly grasped, we begin to pronounce our words more distinctly than usual and to lay greater stress upon them. The result of this is a clear enunciation of all the syllables of a word, and sometimes a phonetic addition to the word itself. In this way we may explain the adventitious dental that has attached itself to the end of a word like *sound*, Latin *sonus*, French *son*, or the aspirate which is inserted in the wrong place by persons who are conscious of a difficulty in pronouncing it in the right place. So, again, in talking to a foreigner we instinctively raise the voice and repeat our remarks in a louder tone should he fail to comprehend them. The more readily our thoughts are understood, the less need there is of our dwelling upon the sounds which express them. Hence it is that with the progress of culture and education, and the consequent advance in quickness of perception, our words get worn away and slurred over, and a fragment only of the original word or the original sentence is often sufficient to convey our meaning. English and French are prominent examples of this fact, French cutting off its final consonants, and English softening its harder letters and avoiding the free play of the lips. Classical Italian, nurtured on the pedantic and metrical pronunciation of literary Latin and screened by the moun-

tains of Tuscany, cannot, it has been well said, be spoken rapidly; but if we go to the Bolognese dialect, where these influences have not been at work, we shall find "A n' vuoi t' m' in parl, S'nor," doing duty for, "I won't have you to speak to me about it, sir."[1] While the educated Frenchman leaves the negative to be supplied by the mind when using *pas*, *point*, or *jamais* by themselves, the uneducated Englishman strengthens his negative by repeating it. Indeed, the repetition of the negative in order to emphasize the negation is a mark of most early languages, and runs parallel with the gesture and gesticulation which characterize the tongues of savages and barbarians. The muscular effort called forth by the latter necessarily extends also to the elocution, and a speaker generally finds that the clearness of his utterances is assisted by the exercise of the muscles of the arms and face.

Emphasis acts upon the outward sounds of a word as well as upon its inner meaning, and like analogy, though by the contrary process of differentiation, tends to build up new grammatical forms. The English *thunder* and *jaundice* go back to an Anglo-Saxon *thunor* and a French *jaunisse*, where the intrusive dental must be referred to the desire of clearness, since it can hardly be said to facilitate the pronunciation. So, too, in *impregnable* and *groom*, the French *imprenable* and Anglo-Saxon *guman*, we have other instances of the same striving after distinct and emphatic utterance, and the extension of the Greek πόλις (Sanskrit *puris*) into πτόλις, or of πόλεμος into πτόλεμος must be put down to a similar cause. People who

[1] Burton: "Etruscan Bologna," p. 246.

wish to be very particular in the pronunciation of their words are apt to say *kyind* for *kind*, and the Italian *luogho* has arisen in no other way out of the Latin *locus*. The varying quality of a vowel, or an apparent exception to Grimm's laws of letter-change may be explained by this principle of emphasis. Thus the Greek οἶδα, like the Sanskrit *vêda* or the Gothic *vait*, has a diphthong in the singular, whereas in the dual and plural the vowel is short (*i*). This has resulted from the fact that the primitive Aryan laid the accent on the first syllable of the word in the singular; the less familiar flections of the dual and plural, however, were accented, and so preserved the short vowel of the root from being changed. In the same way the Old High German perfect *laiþ* in the singular observes the rule which makes an Old High German þ answer to an original *d*; in the plural, however, where the corresponding Sanskrit form accents the suffixes and not the root (as in the singular) the rule is violated and we have *lidum*, *lidu*þ and *lidun*. So, too, by the side of the Old High German *brôþar* (*bruder*), answering to a primitive *bhrâ'tar*, we find *môdar* (*mutter*) and *fadar* (*vater*) answering to a primitive *mâtár* and *pitár* (*pâtár*); while the accent of the Vedic *saptán* and the Greek ἑπτά, "seven," shows why the Old High German *seban* and the Gothic *sibun* have *b* instead of the regular *f*.[1]

Emphasis enriches the vocabulary, first of all by introducing synonyms, and then by making a distinction of meaning between them. To set two synonyms side by side is the best way of giving clearness and intelligibility to our thoughts. Much of the charm of our authorized

[1] Karl Verner in Kuhn's "Zeitschrift," xxiii. (New Series, iii. 2.)

version of the Bible is due to the attempt of the translators to bring out the meaning of a Greek or Hebrew word by using two equivalents, one from a Romanic, the other from a Teutonic source. There comes a time, however, when we begin to contrast and differentiate the two synonyms; and so *love* comes to include much more than its New Testament synonym *charity*, and *pastor*, the synonym of *shepherd*, is confined to ecclesiastical language, while custom only allows us to say "*much* obliged," and "very grateful."[1]

Of a similar nature is the process whereby two varying forms of the same word become distinguished in use and signification. Thus the Latin *tepor* and *tempus* both go back to an earlier *tapas*, "heat," but the strengthening of the first syllable of the one, and the change of *s* into *r* in the other, caused them to break apart and in course of time to be employed with a totally different meaning. The difference of sense brought with it a difference of gender, and thus introduced a grammatical change. The analogy of other nouns in final *-or* or *-os* preserved the masculine use of *tepor*, while *tempus* followed the gender of neuters like *genus*. The history of the termination of the nominative singular of Latin comparatives has been much the same. This was indifferently *-ior* or *-ios* (*-ius*), like the Greek *-ίων* and the Sanskrit *-yan* from an earlier *-yans*, and in Valerius Antias[2] we find *prior* still used for the neuter in the phrase "senatus-consultum prior," while the title of the fourth book of Cassius He-

[1] For Greek synonyms, see Trench: "Synonyms of the New Testament" (1865).

[2] Apud Priscian. vii. 345.

mina's Annals was, "Bellum Punicum posterior." *Arbor* and *robur* were originally identical, and M. Bréal has shown that this was also the case with *cruor* and *crus*.[1] The two latter words both represent the Sanskrit *kravis* and the Greek κρέας in the sense of "bloody flesh" or "bloody limb," and their differentiation was aided by the introduction of a new word, *caro*, in the sense of "flesh." *Caro* originally meant simply "part" or "portion," a sense in which the Umbrian *karu* is still employed in the Engubine Tables,[2] and the Oscan *carneis* in the Tabula Bantina. Roots, too, as well as derivatives, may be differentiated and gradually assume independent meanings. Thus in Greek, if we follow the usual theory, the old root *ar* or *ara* has been split up into three, ἀρ-, ἐρ-, and ὀρ-, in accordance with the threefold representation of the Sanskrit *ă* in European Aryan. Accordingly by the side of ἀρόω, the Latin *arare*, the Gothic *arjan* (Old English *ear*), which appropriated to itself the sense of "ploughing," we have also ἐρέσσω (*remus*) in the sense of "rowing," and ὄρ-νυμι (*orior*) in the sense of "rising" to one's work. This differentiation of the three roots, however, seems to have come about after the separation of the several members of the Aryan group, as we find no trace of it in the Asiatic branch of the family, and it must, therefore, have really taken place in the fully-formed words of the European tongues.[3] Greek with

[1] "Mémoires de la Société de Linguistique de Paris," ii. 5.

[2] V. *a* 24, *sve mestru karu fratru* = "si major pars fratrum."

[3] On the other hand, the Asiatic members of the family have certainly lost the distinction that existed in the parent speech between the vowels represented in the European members by *ă*, *ĕ*, and *ŏ*, so that the differentiation of the root *ar* may have been

its delicate sense of vocalic difference shows a special tendency towards utilizing vowel changes for grammatical purposes. Thus the reduplicated syllables in δίδωμι and δέδωκα were originally identical, but in course of time, while the sound of *i* was appropriated to the present tense, the sound of *e* came to mark the perfect. In the same way Greek verbs in -αω, -εω, -οω all go back to the form which we have in the Sanskrit *-ayâmi*, but later usage tended to assign a transitive meaning to the form in -οω, and an intransitive one to that in -εω, while that in -αω floated between the two. It is probable that the three Semitic case-endings in *u, i, a*, which respectively denoted the nominative, genitive, and accusative, all went back to a primary indeterminate *-a*. In the Negro Dinka language certain plurals are formed by lengthening or sharpening the vowel of the singular, like *rōr*, the plural of *ror*, "wood," *nim*, the plural of *nom*, "head," *līb*, the plural of *lyep*, "tongue," or *tut*, the plural of *tuot*, "goose;" and since we find that a verb becomes passive by simply lengthening the final *i* of the formative elements (as *ran a-tšī tšōl*, "the man has been called," by the side of *ran a-tši tsōl*, "the man has called"), it is possible that the vowel change in all these cases is due to differentiation for the sake of clearness and emphasis. Such at least has been the origin of the tones which form so marked a feature in Chinese. Dr. Edkins has shown that the confusion between words of different signification occasioned

earlier than the period of Aryan separation. In the Finnic group roots are similarly differentiated by a modification of the vowel, *kah-isen*, *koh-isen*, and *kuh-isen*, for instance, being "to hit" or "stamp," *käh-isen* and *köh-isen*, "to roar," *keh-isen* and *kih-isen*, "to boil."

by the loss of various initial and final letters in pronunciation was obviated by the substitution of tones, and the effects of phonetic decay have been thus neutralized by the action of the contrary principle of emphasis.

One of the modes in which this principle comes into play is what Professor Max Müller has called Dialectic Regeneration. The words and grammatical forms which have become effete in the literary dialect, are often replaced by others taken up from the fresh fountain of "provincial" speech. There is nothing any longer to attract attention in what has become so prosaic an expression as "the four cardinal points," striking as the phrase once was; but when Carlyle goes to the Scotch and borrows from it the "four airts," we are at once arrested by the unusual character of the word, a special emphasis is laid upon it, and we begin to realize its full meaning. It is in a period of social revolution, like that of the Norman Conquest in England, that Dialectic Regeneration is best seen at work on the literary language. As soon as the latter loses the support of the educated classes, it fails to withstand the attack of the less favoured but more deeply rooted dialects which have surrounded it, and, as in the case of literary Anglo-Saxon with its inflections and learned terms, it disappears for ever. The unwritten languages of savages and barbarians are in a continual state of flux and change. Old words and expressions which have ceased to possess the needed amount of clearness and emphasis have to make way for new ones. The slang of the schoolboy, or the cant of thieves and costermongers, exemplifies the same fact. It is not so much the desire of revolting against the proprieties of

a civilized society, or of framing a secret jargon which shall be unintelligible to others, that produces these wild outgrowths of language; it is rather the feeling that the conventional terms have become mere symbols, or, as Hobbes said, the counters of wise men, and that the ideas which are perceived and felt clearly should be expressed with equal clearness and force. Man is not wholly ruled by the wish to save himself trouble and attain his object with the least effort; the healthy love of physical exertion for its own sake is also a powerful motive in human life. It is only with the growth of civilization and thought that the exertion is transferred from the muscles to the brain, that words become so many algebraic signs, and that syntax takes the place of elocution. It has been often noticed that the tendency of the modern languages of Europe is towards a monotonous level of both accent and tone; but it must be remembered that, as long as poetry exists, there will exist also a tendency in the opposite direction, as well as a protest against the reduction of all language into a mere reflection of the dry light of reason. Laziness will not explain everything in speech any more than it will in the ordinary dealings of mankind. As Sievers states:—"We even now often find it stated in works on the science of language, that all phonetic change results from a striving to facilitate the pronunciation and simplify the articulation; or, in other words, that change of sound always consists in a weakening of sound and not in a strengthening of it. We may allow that although many of the phænomena observable in the history of speech can be brought under this rule, the general application of the

statement is absolutely false. . . The idea of facilitating the pronunciation, if it is to be any longer maintained, must be regarded as an essentially relative one. Speaking generally, we must never forget that the different degrees of difficulty in uttering various sounds are in themselves extraordinarily slight, and that real difficulties in forming them are usually experienced only in the case of sounds belonging to a foreign language. . . In short, real difficulties in pronunciation are never specially felt by the members of a community which speaks a given language, and with them only a further development of their language is possible."

This brings us to the third and last cause of change of language, laziness, or, as it has also been termed, the principle of least effort. As the results of laziness show themselves principally in the alterations undergone by the sounds of speech, this cause of change is commonly known under the name of Phonetic Decay.[1] But the meanings of words as well as the expression of grammatical relations are as much subject to decay as the sounds of speech; the outward form of *age* which can be traced back to the Low Latin *ætaticum* and the classical *ætas*, has suffered no less from the wear and tear of time than its inward signification, which goes back to a root meaning "to go." Like the present strata of the earth which are the *débris* of the earlier rocks, the present strata of language are the worn-out relics of older formations. The power of laziness, more especially in the shape of phonetic decay, is conspicuous in almost every word we utter; it is the first agent of linguistic change

[1] This happy term was the invention of Professor Max Müller.

that strikes the student, and it has accordingly attracted more than its due share of attention. The influence of laziness has been insisted on to the exclusion of the two other equally important causes of change in speech, and the growth of grammatical consciousness, the discovery of new grammatical relations and the development of fresh mental points of view, have even been ascribed to its action. No doubt its influence is great and far-reaching, but we must be on our guard against regarding laziness as sufficient of itself to explain all the phænomena of language. Phonology is rather affected by it than either morphology or sematology. Owing, however, to the large place assigned to it in works on comparative philology, it will not be necessary to dwell upon it here in any great detail. We naturally seek to make ourselves understood by our neighbours with the least possible amount of trouble. Muscular and still more mental fatigue is distasteful to us, and the less we have to exert our vocal organs and powers of thinking when making our meaning clear to another, the better satisfied we are sure to be. Hence it happens that we constantly use words with a very dim appreciation indeed of their full and exact significance. We select that part of the meaning only which for some reason or other has made an impression upon our minds, and very often this part of the meaning is merely subsidiary and accidental to the proper signification of the word. But we are too lazy to realize that proper signification, and so pass words on to others the mere shadow and fragment of their former selves. It may often happen that a sense originally imported into a word by the context in which it accidentally found itself

becomes appropriated to it to the gradual exclusion of its real signification. The word *silly*, for example, which once meant "blessed," like its German cousin *selig*, from being applied euphemistically to half-witted persons, has entirely lost its true meaning. A word like *impertinent* is still in process of being changed. Its positive *pertinent* has hitherto preserved its proper sense, at all events in literature; but the popular mind has already forgotten the meaning of the negative, and only a short while ago a member of Parliament was called to order for describing a remark as "impertinent." Here the accidental application of a word has caused its primary meaning to fall into neglect. Still more striking is the fate which has befallen words like *transpire* and *eliminate*. The newspapers speak of events "transpiring" in absolute disregard of the fact that events can hardly "breathe through," while *eliminate* has been used not in the sense of removing out of the way but of bringing in.[1] It is so much easier to guess at the meaning of a word from the context in which it occurs than to trace it back to its real signification, and so long as our use of it is intelligible there is little care among ordinary speakers as to whether that use is correct or not.

In this way general terms come to be restricted to individuals, while words which denote the particular are extended to denote the universal. *Deer*, which, like the cognate German *thier* and Latin *fera*, originally signified wild animals of all kinds, is now confined to a particular species; while, on the other hand, the Latin *emere*, which properly signified "to take" in general, came to

[1] Mill: "System of Logic," ii. p. 240.

be restricted to the special meaning of taking when we "buy." The older significations of words are continually decaying and being supplanted by new ones. Those who use them are too lazy to find out their exact significance.

The principle of laziness is equally active in the province of grammar. Here, too, the relations formerly conceived to exist between the several parts of the sentence may be forgotten altogether or replaced by other relations. The inflections of the Anglo-Saxon noun have been almost all lost, and the datives *him* and *whom* have become objective cases. Prepositions have taken the place of the case-endings, the adjective no longer "agrees" with its noun, but is now conceived of as a simple attribute, while all remembrance of the dative relation has faded out of the expressions "give me a book," "send it away." The subjunctive is fast ceasing to exist, and the modern Englishman troubles himself but little about the difference between *be* and *is* or between *if I was* and *if I were*.

It is in phonology, however, that the principle of laziness is most active. As far back as we can follow the history of language we see the stronger and harder sounds perpetually changing into weaker and easier ones; and so uniform and constant is this tendency that in the absence of counter-indications we are justified in referring most cases of phonetic change with which we may meet to the operation of decay. Mr. Douse[1] has lately made an ingenious but unsuccessful attempt to assign the phænomena of Grimm's law to what he term

[1] Grimm's "Law: a Study" (1876).

the principle of least effort, by supposing that the different phonetic systems of the several branches of the Indo-European family were evolved out of the *tenues* or hard consonants, at a time when these branches were still co-existing dialects of a single language, through the influence of "Reflex Dissimilation." Reflex dissimilation is explained to be a more complicated and somewhat varying instance of that simple cross compensation which we see exemplified in the Cockney interchange of *v* and *w*, or the perverse persistency with which the same persons, who leave out the aspirate where it ought to exist, insert it where it ought to be omitted. In both cross compensation and reflex dissimilation, however, we have a compound action of the two antagonistic principles of laziness and emphasis.

The age of a language is marked by the extent to which it has been affected by phonetic decay, and when we find how large its influence has been upon the Old Egyptian and the Accadian of Chaldæa, as they appear in the earliest monuments we possess, we may form some idea of the length of time that must have elapsed since those languages were first being moulded and fixed. At the same time we must not forget that phonetic decay will act more readily upon some classes of languages than upon others. Wherever there is no clear consciousness of the distinction between root and grammatical suffix, as in our own inflectional family of speech, there we may expect a greater and more rapid amount of change than in agglutinative dialects where the relations of grammar are expressed by independent or semi-independent words. But even the latter cannot escape the law of gradual de-

cay. To pass over the incorporating Basque in which words like *dakarkiotezute*, "ye eat it for them," or *detzadan*, "that I should have them," have to be decomposed into *da*, "it" or "him," *ekarri*, "to eat," *ki*, sign of the dative, *o*, "for him," *te*, sign of the plural, *zute*, "ye," and *d*, "him," *ez* (*izan*), "to be" or "have," *za*, sign of the plural, *ta*, "I," and *n*, conjunctive affix, we find Yakute Turkish changing *bin* + *śän* ("I + thou") into *biś*, "we,"[1] while the written Japanese *taka-si* and *taka-ki*, "high," are pronounced *takai*. Chinese itself is not exempt from the universal rule. As Dr. Edkins[2] and M. de Rosny have shown, the modern Mandarin dialect has lost numerous initial and final consonants, and words like *yi*, "one," and *ta*, "great," were once *tit* and *dap*. Along the southern bank of the Yang-tsi-kiang and through Chekiang to Fuh-kien the old initials are still preserved, while in the northern provinces no less than three finals have been lost, and the tones by which Chinese words of similar form are distinguished from one another are so many compensations for the loss of letters. Here again we have the principle of emphasis endeavouring to repair the damage wrought by the principle of decay.

A literary dialect is naturally less subject to the inroads of decay than an unwritten one. The spelling of words reacts upon their pronunciation and preserves it from extensive alteration. There is a wide chasm between that Tuscan Italian which has been preserved from corruption by the genius of Dante and the modern dialect of Bologna or Naples. In the age of Cicero the

[1] Böhtlingk: "Ueber die Sprache der Jakuten," p. 168.
[2] "Introduction to the Study of the Chinese Characters" (1876).

*cave ne eas* of polite society had become *cauneas* in the language of the people,[1] and how artificial was the attempt of pedants and purists to maintain the older pronunciation, even to the restoration of the final *s* which had already been dropped by Ennius, appeared pretty plainly as soon as the decline of the Roman empire and the extinction of the literary class deprived it of support. Latin at once fell away into the Romance dialects of modern Europe, just as literary Anglo-Saxon with its inflections and its learned vocabulary disappeared before the Norman Conquest. The language of the Assyrian inscriptions remains almost unaltered throughout the long period of nearly 2,000 years, during which we can watch its fortunes; but this language was the stereotyped one of literature and education, and differed very considerably from the spoken language of the people. The late linguistic character of Hebrew, the extent, that is, to which it has been influenced by phonetic decay as compared with its sister tongues, is an incontrovertible proof of the backward literary condition of its speakers But even literature and cultivation are unable to preserve a language altogether from decay and change. The pronunciation of the educated slowly changes; words become clipped and shortened in spite of their spelling, and notwithstanding printers and schoolmasters the spelling in the end has to follow the pronunciation. Mr. Alexander Ellis has shown in his "Early English Pronunciation" how widely our modern pronunciation of English has departed from that of Shakspeare's time, and the spelling of *though*, *through*, and *enough* bears witness

[1] "De Div." ii. 40, 84.

to a period when they ended in a guttural aspirate. Our pronunciation is still undergoing change; the vowels are becoming more and more indistinct and merged in a common obscure *ĕ*; while such contractions as *I'll*, *I'd*, *won't*, and *can't* can hardly be distinguished from Basque forms like those mentioned above. The educated Englishman speaks, as the French say, with his lips closed; he finds that he can be understood without the trouble of opening and rounding them, and his vowels are accordingly formed in the front rather than in the back part of the mouth. No wonder that he has a difficulty with the French *eu*; the effort to pronounce it is too great a strain upon the unexercised muscles of the lips, and so the English gentleman who told the waiter not to let the *feu* go out in his absence found on his return that his friend had been strictly watched and guarded as a dangerous *fou*.

But though a literature and more especially a widely extended literary education form the chief obstacle to the action of phonetic decay, there are other social influences which operate to the same end. Wherever there is a fixed and stable society, cut off from close intercourse with its neighbours and handing down unchanged its customs and institutions, we are likely to find a more or less fixed and stable language. For language is the mirror of the community that uses it, and where the community alters but little the language will alter but little too. It is in this way that we must explain the fact that Lithuanian, though unprotected by a literature and spoken by the least progressive of the European members of the Aryan family, is yet the most conservative of all the Western

languages of our group, or that the Bedouin of Central Arabia is said to speak at the present day a more archaic language than those of Nineveh or Jerusalem 3,000 years ago. Since the institution of an annual fair among the Rocky Mountains the idioms of the eastern and western Eskimaux, who at first were hardly understood by one another, became more and more assimilated;[1] and the stationary character of Icelandic may be ascribed as much to the isolation of the settled Norse community in the island as to the existence of a literature. Of course, the community must be one which has reached a certain level of culture, and its customs and institutions must imply organization and recognition of fixed principles. Where the customs and institutions are founded on mere unreasoning habit and precedent, we are dealing with a community of barbarians, and consequently with languages or dialects in a perpetual state of flux.

The changes wrought by phonetic decay are sometimes sufficient to alter the whole aspect of a language, and are at once the foundation and the riddle of etymology. Who would recognize in the French *même*, for instance, any derivative from the Latin pronoun *se?* And yet *même* goes back to the Low Latin *semetipsissimum* through the Old Provençal *smetessme*, the later Provençal *medesme* and the Old French *meïsme*. Words of different origin, like *scale* from the Latin *scala* and the Anglo-Saxon *scalu* and *scealu*, may come to assume the same form; while words of the same origin, like the French *captif* and *chétif*, from *captivus*, or *noel* and *natal* from *natalis*, may

[1] Gallatin: "Synopsis of the Indian Tribes of North America," in the "Archæologia Americana," ii.

appear under different forms. The processes of assimilation and swarabhakti, of metathesis and epenthesis, to be described in the next chapter, are so many forms under which phonetic decay displays itself. The history of language is the history of the continual weakening of uttered sounds and the gradual lessening of the demands made upon the organs of speech, and attempts like that to reduce the triliteral roots of the Semitic tongues to biliteral ones are contrary to the whole tendency of language. Accent alone is able to hold out against the assaults of phonetic decay; it is only the accented syllable that remains unchanged when all around it is perishing, and, as in the case of *age* from *ætaticum* or *dine* from *desinere*, is often all that is left of the primitive word. It is again the struggle between the principle of emphasis and the principle of laziness, between conservatism and revolution. Only when the accent is shifted to another syllable can phonetic decay gain the victory, and the shifting of the accent is itself the work of the principle of decay.

The principle of laziness has much to do with the creation of dialects. Slight variations of pronunciation and of the usage of words are as inevitable in language as variations of species in zoology, and where there is no correcting standard these variations are perpetuated and intensified. Helped by the two other causes of linguistic change, the dialect of a household becomes in time the dialect of a clan or tribe, and as soon as its characteristics are sufficiently numerous and distinct, the dialect is transformed into a language. An isolated community will by slow degrees form a new language

for itself. Just as the history and character of one society differ from those of another, so too must the dialect or language differ in which the society finds expression. Even where the rapid and intimate intercourse of modern civilization and the safeguard of a common and widely-studied literature stand in the way, as in the case of England and America, dialectical differences and peculiarities will yet spring up. In savage and barbarous communities the growth of innumerable dialects is a matter of necessity. The manifold languages of the Malayan and Polynesian Archipelago can be traced back to a common source, but the natives of two neighbouring islands are often unintelligible to one another; while von der Gabelentz says of the Melanesians, that "every small island has its own language or even several languages."[1] Before the utter extinction of the Tasmanians, with a population of no more than fifty persons there were four dialects, each with a different word for "ear," "eye," "head," and other equally common objects. The language of a shifting unorganized community will reflect the condition of those who speak it, and we are not surprised, therefore, at Captain Gordon's assertion that "some" of the Manipuran dialects "are spoken by no more than thirty

[1] "Die Melanesischen Sprachen" (1873), p. 4. According to Meyer ("Sitzungsberichte d. Oesterr. Akademie," 1874, p. 301), "Riedel has made us acquainted with twenty-three dialects in some parts only of North Celebes, and the number of dialects in the whole island can only be estimated at hundreds . . . . But in New Guinea this dialectical variety is very much greater and more thorough-going, since there the very foundations of a state have not yet begun to be laid."

or forty families, yet (are) so different from the rest as to be unintelligible to the nearest neighbourhood." Humboldt tells us[1] that in South America, together with a great analogy of physical constitution, "a surprising variety of languages is observed among nations of the same origin, and which European travellers scarcely distinguish by their features." Greece, with its small extent of country and still smaller amount of population, was said a few years back to possess no fewer than seventy dialects,[2] and no less than eight principal dialects besides several subordinate ones exist among the modern Basques, whose whole population is under 800,000.[3] Indeed, considering the isolation of the Basques, socially, politically, and linguistically, as well as the narrow tract of country into which they have been compressed, it is remarkable that natives of places not forty miles distant from one another are yet mutually unintelligible.[4] But the natural condition of language is diversity and change, and it is only under the artificial influences of civilization and culture that a language becomes uniform and stationary. As soon as the coercive hand of civilization is removed it breaks out again into a plentiful crop of dialects. Of course, the vicissitudes through which semi-civilized peoples are continually passing

[1] "Travels" (English translation), i. 298.

[2] Gibbon: "Decline and Fall of the Roman Empire" (ed. Milman and Smith), vii. p. 387. Dr. Deffner, however, asserts that there never was a tithe of that number of dialects in the country.

[3] Prince Lucien Bonaparte reckons that there are 660,000 Basques in Spain and 140,000 in France.

[4] Sayce: "Principles of Comparative Philology" (2nd edition), p. 87.

greatly assist the process of change. Conquest and the mixture consequent upon it, famine, disease, and migration, are all powerful aids to dialect-making. The women of a tribe who stay at home, or who have been married out of another tribe, sometimes possess a language different from that of the men; thus, the Carib women in the Antille Isles used a different tongue from that of their husbands, while the Eskimaux women in Greenland turn *k* into *ng* and *t* into *n*.[1] Even religion and superstition play their part in the work; the sacred language of the "medicine-men" in Greenland, for instance, is for the most part an arbitrary perversion of the significations of known words; thus *tak*, "darkness," is used in the sense of "the north," and so gives rise to two new words of this secret speech, *tarsoak*, "earth," and *tarsoarmis*, "roots." The custom of *tapu* among the Pacific Islanders, according to which every word which contains a syllable identical with some part of the name of the reigning chief has to be dropped or changed, is due to the belief that all things belonging to a chief are consecrated and inviolable. Since the reign of Queen Pomare *mi* has been substituted for *po*, "night," in Tahitian, and Hale tells us of this language[2] that its "manner of forming new words seems to be arbitrary. In many cases the substitutes are made by changing or dropping some letter or letters of the original word, as *hopoi* for *hepai*, . . . *au* for *tau*, &c. In other cases the word substituted is one which

[1] The progress of cuneiform research has shown that a similar woman's dialect existed among the Accadians, and "a woman's language" is also said to exist in Bengal. See the Z. D. M. G. xxxv. 4, p. 763 (1881).

[2] "United States Exploring Expedition," vii. 290.

had before a meaning nearly related to that of the term disused. . . . In some cases the meaning or origin of the new word is unknown, and it may be a mere invention, as *ofai* for *ohatu* 'stone,' *papai* for *vai*, 'water,' *pohe* for *mate*, 'dead.'" Similar to the Polynesian *tapu* is the Chinese custom of tabooing the elements of the reigning emperor's name, and the *ukuhlonipa*, which forbids the Kafir women to pronounce a word containing a sound like one in the names of their nearest relations. Thus, "Mr. Leslie states that the wives of Panda's sons would never call him (Mr. Leslie) by his Kafir name of u' Lpondo, on account of its partial identity with that of the chief, their father-in-law. In the name of the river Amanzimtoti, 'Sweet Waters,' in like manner, *mtoti* has been substituted for *mnandi*, hlonipaed or tabooed on account of its occurring in the name of Tsaka's mother Unandi."[1]

The Abipones of South America similarly alter the names of the friends and relatives of a dead member of the tribe, and the words which entered into the composition of his name are dropped out of use.[2] For a parallel superstition we have only to think of the old European belief in the omen involved in the mere pronunciation of a word, which caused the Greek to speak of his left hand

[1] "Natal Colonist," Sept. 3rd, 1875. Mr. Theal says ("The Cape Monthly Magazine," June, 1877, p. 349): "A woman, who sang the song of 'Tangalimlibo' for me, used the word *angoca*, instead of *amanzi*, for 'water,' because this last contained the syllable *nzi*, which she would not on any account pronounce. She had, therefore, manufactured another word, the meaning of which had to be judged by the context, as, standing alone, it is meaningless." This is a good instance of the way in which a savage dialect may grow up.

[2] Waitz, iii. 477.

as ἀρίστερος, "the better one," and the Roman to change Maleventum into Beneventum. The belief in the power of words, in the *vis verbi* as the Latin termed it, is even now not extinct, and the same feeling which altered the "Cape of Storms" into the "Cape of Good Hope" is still prevalent among us.

The sacred jargon of the Eskimaux sorcerer, which finds its analogue in the slang of the schoolboy, is merely one step lower than the ceremonial dialects which are to be met with all over the world. The *Bhasa Krama* or ceremonial language of Java, for example, like the ceremonial languages of the larger islands of Polynesia, or the ceremonial conjugation of the ancient Azteks, hedges in the upper classes of the community with a veritable *tapu*. So, too, the Japanese when addressing a superior has to speak of himself as *gu-sau*, "a stupid vegetable," or *yátsŭ-ko* (contracted *yákko*), "house-boy," and of another as *nandzi*, "famous," or *te-máye-san*, "the gentleman at hand," while *o* or *on*, "great," is prefixed to all words which relate to the latter[1] and distinctive verbs and verbal forms employed expressive of courtesy.[2] The Chinaman is equally the slave of an artificial politeness; he is himself "the thief" (*ts'ie*), "the soft-brained" (*'iu*), while the person he addresses is "the honourable" (*ling*) or "the noble brother" (*ling hiung*).[3] The Indian *bhavan*, "present," is construed with the third person in order to denote

[1] *Mi* took the place of *o* in old Japanese, hence the title of the *Mi-kado*, or "high Gate" (Grande Porte).

[2] See Hoffmann: "Japanese Grammar," pp. 72 *sq.* and § 111-120.

[3] Endlicher: "Chinesische Grammatik," pp. 258 *sq.*

the second with ambiguous courtesy, and the same reluctance to place oneself on a footing of equality by a blunt "thou" shows itself in the Latin of the Hungarian, who will say "Dominus dignetur commodare mihi librum," meaning the second person.[1] The ceremonial use of the pronouns reaches a still greater extreme in German, where in addition to the various titles with which "His Highly well-born," "His most serene," or "His Transparency" require to be addressed, the second person singular has to be represented sometimes by a masculine *Er* ("he"), sometimes by a feminine *Sie* ("she"), sometimes by a plural *Sie* ("they"). The latter reminds us of the Hebrew "pluralis majestatis," and recalls our own employment of the plural *you* for the singular *thou*. Our usage in this respect was probably influenced by the French use of *vous*, and it is perhaps to the same influence that we may ascribe the Basque use of *Zute*, "you," instead of *Zu*, "thou," which seems of comparatively late introduction. Two Basque dialects, indeed, the Souletin and the east Low Navarese, have even developed a ceremonial conjugation, every person of which, except the second plural, assumes a special form when a superior is addressed. Besides the ceremonial conjugation there is also a feminine one, employed whenever a woman is spoken to. It must be remembered that the Basque verb is an amalgamation of the verbal root with the personal pronouns.

The rapid changes undergone by languages in a natural state can only be appreciated by those who have had experience of a tribe of wandering savages, or who have

[1] Pott: Humboldt's "Verschiedenheit des menschlichen Sprachbaues," i. p. 395.

observed the alterations children would make in the language they learn if left to themselves. According to Waldeck, a dictionary compiled by Jesuit missionaries in Central America became useless within ten years; and Messerschmidt states that the inhabitants of Ostiak villages, only a mile or two apart, are unintelligible to one another.[1] The Hurons, Sagard stated in 1631, spoke such a variety of dialects that not only was the same language hardly to be heard in two adjacent villages, but even in two adjacent houses, and these multitudinous dialects he further described as changing every day. Mr. Trumbull, however, points out that Sagard's account must be received with caution, since he says that the instability of language among the French was almost as great as among the Hurons, and his "very imperfect dictionary of this unstable language, 200 years or more after it was compiled, enabled Duponceau to make himself understood without apparent difficulty by the Wyandots, a remnant of the last nation of the Hurons."[2]

But the following account given by Sir C. Lyell in his "Antiquity of Man,"[3] shows that it is not necessary for a community to be semi-civilized or barbarous in order to prove how rapidly a non-literary language can be transformed. "A German colony in Pennsylvania," he says, "was cut off from frequent communication with Europe for about a quarter of a century, during the wars of the French Revolution, between 1792 and 1815. So marked

[1] Max Müller: "Lectures," i. p. 56.

[2] "On the best Method of Studying the American Languages," p. 11.

[3] P. 152 (4th edition).

had been the effect even of this brief and imperfect isolation, that when Prince Bernhard of Saxe-Weimar travelled among them a few years after the peace, he found the peasants speaking as they had done in Germany in the preceding century, and retaining a dialect which at home had already become obsolete. Even after the renewal of the German emigration from Europe, when I travelled in 1841, among the same people in the retired valleys of the Alleghanies, I found the newspapers full of terms half-English and half-German, and many an Anglo-Saxon word which had assumed a Teutonic dress, as 'fencen,' to fence, instead of umzaünen; 'flauer,' for flour, instead of mehl, and so on." Destroy literature and facility of intercommunication, and the languages of England and America would soon be as different as those of France and Italy.

It is civilization which counteracts the natural tendency to multiply dialects, and which is ever striving to absorb the manifold dialects that exist into a single tongue. All the social conditions of civilized life tend to break down dialects, to assimilate languages, and to create a common medium of intercourse. A common government, a common literature, a common history and a common law, all require a common language. The Macedonian Empire made Greek the language of the East, and Rome effectually stamped out the various idioms of its subjects in the West. It needed an invasion of barbarism and the overthrow of Roman organization and culture to restore the period of linguistic disunion. The Church remained the sole representative of civilization, and consequently the sole possessor of a

common tongue. In fact, wherever civilization has made an advance, the action of the great causes of change in language has received a check. Every conquest over a horde of barbarians, every attempt to found a settled government, to establish a code of laws, to systematize a religion, or to originate a literature, is a step forward in the direction of linguistic unity. The practical aim of the science of language is the formation of a universal speech, and the time may yet come when the dream will be converted into a reality. The inventions of the present century —the steamer, the railway, and the telegraph—are bringing all parts of the world into a closer connection with one another, and abolishing the barriers created by differences of speech. Commerce demands a *lingua franca*, and now that commerce is world-wide its *lingua franca* must be world-wide also.

The language of the chief trading nations must finally prevail in the struggle for existence, and the prophecy has already been hazarded that pigeon-English, or a similar grammarless jargon, will be the future medium of universal intercourse. However this may be, the endeavour to revive the perishing languages of Europe, and to make the limits of speech the limits of nationality, is a reversal of the lesson of history and a return to primitive barbarism. It is but the transient reaction against the Empire of the first Napoleon, based on the false belief that language and race are convertible terms. But the endeavour, however flattering to nations without a history, is doomed to failure. Little by little the weaker languages and dialects of Europe are disappearing before the schoolmaster and the railway, and artificial nurture

can alone protract their lingering existence. Gaelic and Welsh in our own islands, like Breton in France or Lithuanian in Germany and Russia, must share the fate which has already overtaken Cornish and Wendic. The last Wendic speaker, Frau Gülzsin, died on the Island of Rügen as long ago as 1404,[1] while Lithuanian is now used by scarcely a million and a half persons, in spite of the philosopher Immanuel Kant's plea for it as "a still unmixed language of an old people, now isolated and confined within narrow bounds," which would throw light on the history of the past.[2] The tendency of time is to unify and simplify, and exact science even now has but one tongue throughout the world. The attempt of Bishop Wilkins to invent a universal language failed, not because it was premature, but because such a language, like all others, must be a spontaneous growth; a better fortune may await the Pasigraphy of Bachmaier,[3] which attempts to do for the man of literature what the Arabic ciphers have done for the mathematician, since writing differs from language in being a conscious human invention.

The history of the extinction of languages is similar to that of the extinction of dialects. We see the same process at work in both cases, only on a different scale. Where several dialects exist together, the one which belongs to the dominant class will finally prevail over the others. The "Queen's English" is really the court dialect

[1] Andree: "Wendische Wanderstudien" (1874).

[2] Appendix to Mielcke's edition of Ruhig's "Wörterbuch."

[3] "Pasigraphical Dictionary and Grammar" (1871). Galliani's "Dictionnaire télégraphique, économique, et secret" contains 15,576 groups of only three letters, each of which expresses a word or a whole sentence.

of Chaucer's day, which became the dialect of literature and education, and so has succeeded in degrading its sister-dialects into illiterate provincialisms, and in many cases in destroying them altogether. Where the educated and ruling caste is small, the other dialects will continue to flourish among the mass of the people, and on the overthrow of the cultured class will once more assert their own. But in a democratic age like the present, when books and newspapers are multiplied by the printing press, and the whole nation is being leavened by the general spread of education, the dialect of civilization will sooner or later swallow up its less favoured sisters. The remarkable sameness of dialect which prevails among the Arabic-speaking populations of the East may be largely accounted for by the democratic spirit of Mahommedanism which holds all men equal before the supreme Khalif. It is, therefore, of the highest importance to comparative philology that the decaying dialects of our own or other countries should be observed and written down before they have perished. The history of a language can be traced only by a comparison of its dialects, which often preserve words and forms that have become obscure and inexplicable in the standard dialect itself. Where the allied dialects have disappeared, the chasm that divides the language we are studying from those with which it was once connected may be too wide to be easily spanned. For in language, as in everything else, dialect passes gradually and insensibly into dialect, and it is not until we compare the two extremes in the series that we are made aware of the accumulated differences which the transitions have involved.

The progress of civilization, then, implies a continuous diminution of the languages and dialects of the world, and a corresponding extension of a single tongue. Just as we have seen that language advances from complexity to simplicity, so we now see that it advances from multiplicity to unity. The more barbarous a society is, the more numerous will be the languages that it speaks. The further back we go into the past, the greater must be the linguistic anarchy with which we meet. A language begins with dialects, and since language is the product and reflection of the community that uses it, the primæval languages of the world must have been as infinitely numerous as the communities that spoke them. We start with the Babel of confusion, with the houseless savage who did that which was right in his own eyes. Language, it is true, first cemented society together, but it also made each society a body of hostile units. Many as are the existing languages of the earth, they are but the selected relics of an infinitely greater number which have passed away. Here and there we still come across the last waifs of an otherwise extinct family of speech, the last survivors of a group of languages and dialects which has long since been forgotten. The Basque, like the scattered languages of the Caucasus, seems to have no connection with any other known speech; sheltered by the mountain fastnesses of Biscay, it remains to bear witness to the linguistic character of an extinct world. So far as appears at present, the mysterious Etruscan which has left us some 3,000 short inscriptions is another forlorn waif, without kith or kin in the world of known tongues. Perhaps, too, the language of the Lykian in-

scriptions, which still refuses to be "classified" in spite of the efforts that have been made to turn it into an Iranian idiom, is a further example of the same kind. The boulders that have been left on our hilltops do not tell us with more certainty of the icebergs and icefloes which brought them thither, than do these stray languages of the manifold forms of speech of which they are the scanty remnants. Our only wonder should be not that there are any tongues which refuse to be classed with others, but that there are so few which thus maintain an isolated existence.

As we shall see hereafter, families of languages are exceptional in the history of speech. Professor Max Müller very truly says:[1] "Families of languages are very peculiar formations; they are, and they must be, the exception, not the rule, in the growth of language. There was always the possibility, but there never was, as far as I can judge, any necessity for human speech leaving its primitive stage of wild growth and decay." "If we confine ourselves to the Asiatic continent, with its important peninsula of Europe, we find that in the vast desert of drifting human speech, three, and only three oases have been formed, in which, before the beginning of all history, language became permanent and traditional; assumed, in fact, a new character—a character totally different from the original character of the floating and constantly varying speech of human beings." And these oases, these families of speech, it is important to remember, are themselves made up of dialects, only dialects with a common grammar and a common stock of roots. We may, if we like, construct a

[1] "Lectures on the Science of Religion," pp. 161, 154.

hypothetical "parent-speech," from which we may derive the several dialects and languages which are the only facts we have to work upon; but we must not forget that such a parent-speech is purely hypothetical, the product of reflective analysis and logical deduction. Fick's dictionary of the Parent-Aryan is as much the creation of the comparative philologist's closet as Schleicher's "restoration" of its grammatical forms. Because the Sanskrit *panchan* and the Latin *quinque* can both be reduced to the same form *quemquem*, it does not follow that the latter form was ever actually existent. As far back as we can go, we still find ourselves in the presence of allied dialects, never of a single tongue. The east-Aryan primitive *ghard*, "heart," cannot be reduced to the same form as the west-Aryan *kard*, with the same meaning; the two variant forms of the root testify to a dialectical difference from the outset.[1] Such, too, is the evidence of words like those for "daughter," Greek θυγάτηρ, but Sanskrit *duhitâ*, or "door," Greek θύρα, Sanskrit *dwâram* (not *dhwâram*), while the demonstrative pronouns appear from the first under two incompatible forms *sa*(s) and *ta*(s). For the sake of convenience we may assume a parent-speech; we may even go so far as to picture to ourselves a family of languages like a family in social life, except that it springs not from two ancestors but from one; but unless we bear in mind that these assumptions are like the assumptions of the geometer, ideal creations, never realized in the actual world, we shall be betrayed into numberless absurdities

[1] Bréal: "La Langue Indo-Européenne," in his "Mélanges de Philologie Comparée" (1878).

and false conclusions. It is to them, indeed, that we owe the belief that the primitive Aryans had but the single vowel *a* in their alphabet besides the three tenues *k*, *t*, *p*, the labials *r*, *m*, *n*, and the sibilant *s*. Even Dr. Murray, with his nine primæval roots *ag*, *bag*, *dwag*, *gwag*, *lag*, *mag*, *nag*, *rag*, and *swag*, did better than this.[1]

Repulsion and division, then, is the natural condition of language. The three causes of change are ever actively at work, and the influence of civilization cannot entirely destroy their power. But with the advance of culture, the dividing barriers are broken down, and to borrow a metaphor from mechanics, the centrifugal is exchanged for the centripetal force. Dialects make way for lan-

[1] "History of the European Languages," pp. 31, 32. The following are the significations assigned to these nine rudiments of speech:—

"I. To strike or move with swift, equable, penetrating or sharp effect was AG! AG!

If the motion was less sudden, but of the same species, WAG.

If made with force and a great effort, HWAG.

These are varieties of one word, originally used to mark the motion of fire, water, wind, darts.

"II. To strike with a quick, vigorous, impelling force, BAG or BWAG, of which FAG and PAG are softer varieties.

"III. To strike with a harsh, violent, strong blow, DWAG, of which THWAG and TWAG are varieties.

"IV. To move or strike with a quick, tottering, unequal impulse, GWAG or CWAG.

"V. To strike with a pliant slap, LAG and HLAG.

"VI. To press by strong force or impulse so as to condense, bruise, or compel, MAG.

"VII. To strike with a crushing, destroying power, NAG and HNAG.

"VIII. To strike with a strong, rude, sharp, penetrating power, RAG or HRAG.

"IX. To move with a weighty strong impulse, SWAG."

guages, and languages in their turn tend to centralization. Where thought is of more consequence than the vocal symbols in which it is expressed, means will be found for making the symbols uniform and constant. Language begins with multiplicity and disunion, but its end is unity. The theory that would derive the idioms of the world from three or four primæval centres, or even from a single centre, is contrary to the facts. In the very act of being formed a language necessarily splits itself into dialectical variety. The children of to-day resemble those children of humanity, the first framers of articulate speech, and the children of a single household, if left to themselves, would have each his own jargon, his own dialect. So it was, too, with primitive man. Where circumstances were favourable the inhabitants of the same locality, breathing the same air, and enjoying the same food, would maintain a family likeness in the tongues they spoke ; but elsewhere all the causes of change would have had free play, and the languages of mankind would have been as numerous as the songs of birds. With the growth of society, however, language, the great social unifier, became more and more fixed and settled ; though dialects continued to branch off, they each occupied a wider area, belonged to a larger community, and retained their marks of relationship to one another. When the first level of civilization had been reached, the history of language entered upon a new phase. Families of speech became possible, and the same causes that produced permanence and stability in the customs and beliefs of the community produced them also in the dialects that it used. The first step had been made to-

wards counteracting the anarchy of primæval speech and attaining that ideal unity to which language tends. Here and there the race may have deteriorated; the Hottentots, for instance, with their developed dialects, may be the degenerate descendants of more civilized ancestors; but the movement on the whole has been forward and not backward. Science with a myriad voices declares the ascent and not the descent of man. Our civilization, it is true, like the languages that reflect it, is still imperfect, is still far from the goal that it has in view. But we may take heart from what has been achieved, and perhaps even look forward to the day when there shall be not only one hope and one faith, but also one language in which they shall find utterance.

## APPENDIX TO CHAPTER III.

### SPECIMENS OF MIXED JARGONS.

#### *Maltese.*

St. John i. 1-14. (1.) Fil bidu kienet il kelma, u il kelma kienet 'aand Alla, u Alla kien il kelma. (2.) Dina kienet fil bidu 'aand Alla. (3.) Kollosh biha sar; u minn 'aayrha sheyn ma sar, milli sar. (4.) Fiha il ḥaỹa kienet, u il ḥaỹa kienet id dawl tal bniedmin. (5.) U id dawl yilma fid dlamiyiet, u id dlamiyiet ma fehmuhsh. (6.) Kien hemma bniedem mib'aut mn' Alla, li ismu Jwan. (7.) Dana jie b'shiehed biesh yished mid Dawl, biesh il koll yemmnu bih. (8.) Hua ma kiensh id Dawl, izda kien

biesh yishhed mid Dawl. (9.) Kien Dawl tas sewa, li yuri lil koll bniedem li yiji fid dinya. (10.) Hu kien fid dinya, u id dinya bih saret, u id dinya ma 'aarfetush. (11.) Jie fiḥ weyju, u niesu ma laq'auhsh. (12.) Izda lil dawk kollha li laq'auh, tahom il yedd illi isiru ulied Alla, lil dawka li yemmnu b' Ismu: (13.) Li le twieldu(sh) mid demm, u la mir rieda tal jisem, lanqas mir rieda tar rajel, izda mn' Alla. (14.) U il kelma saret jisem, u 'aammret fostna (u rayna sebḥu [*or* kburitu], bḥala sebḥ li mnissel-waḥdu mil missier), mimlia bil graẓya u bis sewa.

*Creolese* (or broken Danish), the language of 39,000 negroes in Danish West Indies, possessing no genders or numbers, declension or conjugation. See Klauer-Klattowski, "Deutsche Orthoepie," p. 108, and J. C. Kingos, "Kreool A B C Buk" (*S. Croix*, 1770). The language is really Dutch with Danish words intermixed.

St. John i. 1-14. (1.) In die Begin die Woord ha wees, en die Woord ha wees bie Godt, en Godt ha wees die Woord. (2.) Die selve ha wees bie Godt in die Begin. (3.) Almael gut ka maek door die selve; en sonder die niet een gut ka maek, van almael, wat ka maek. (4.) Die Leven ha wees in hem, en die Leven ha wees die Ligt van die Mensen. (5.) En die Ligt ha skien in die Dysternis, en die Dysternis no ha begriep die. (6.) Die ha hab een mens, Godt ha stier hem, en sie naem ha wees Johannes. (7.) Hem ha kom tot een Getiegnis, dat hem ha sal getieg van die Ligt, dat almael ha sal gloov door hem. (8.) Hem no ha wees die Ligt, maer dat hem ha sal getieg van die Ligt. (9.) Die ha wees die waerag-

tig Ligt, die verligt almael Mensen, die kóm na die Weereld. (10.) Hem ha wees in die Weereld, en die Weereld ka maek door hem, en die Weereld no ka ken hem. (11.) Hem ha kom na sie Eigendom, en sie eigen no ha neem hem an. (12.) Maer sooveel ka neem hem an, na sender hem ka giev magt for kom kinders van Godt, die gloov in sie Naem; (13.) Die no bin gebooren van Blud, ook niet van die Wil van Vleis, ook niet van die Wil van man, maer van Godt. (14.) En die Woord ka kom Vleis, en ka woon onder ons, en ons ka kik sie Heerligheid, een Heerligheid, als van die eenig gebooren Soon van die Vaeder, vol van Gnaede en Waerheid.

*Surinam Negro-English* (or rather Negro-English-Dutch), spoken in the Dutch colony of Guiana by at least 100,000 persons, of whom 10,000 are Europeans. See Greenfield, "Defence of the Surinam Negro-English Version," p. 17. It includes Spanish, Portuguese, and French words. Nearly all its words end in a vowel, and it is nearly devoid of grammar. It is called by the Negroes, *Ningre-tongo* or *Bakra.*

St. John i. 1-14. (1.) Na begin da Woord ben de, da Woord ben de nanga Gado, en da Woord ben de Gado srefi. (2.) Da ben de nanga Gado na begin. (3.) Nanga hem allasanni ben kom, en sondro hem no wansanni ben kom, dissi de. (4.) Da Liebi ben de na inni va hem, en da Liebi ben de da kandera va somma. (5.) En da kandera de krieni na dongroe, ma dongroe no ben teki da kandera. (6.) Gado ben senni wan somma, hem neem Johannes; (7.) Da srefiwan ben kom vo wan getingenis, va a getinge vo da kandera, va dem allamal kom briebi nanga hem. (8.) Hem srefi no ben de da kandera, ma a

ben kom va takki vo da kandera. (9.) Datti da reti troe kandera, dissi kieni gi alla somma dissi kom na kondre. (10.) A ben de na kondre, en em srefi ben meki kondre; en kondre no ben sabi hem. (11.) A ben kom na hem Eigendom, en dem somma va hem no ben teki hem. (12.) Ma sa menni va dem dissi ben teki hem, na dem a ben gi trangi, va kom pikien va Gado; dem, dissi briebi na hem neem. (13.) Dissi no komoppo na broedoe, effi na wanni vo skien [nanga broedoe], effi na wanni vo wan man, ma dissi ben kom gebore na Gado. (14.) En da Woord ben kom somma, a ben liebi na wi mindri, en wi ben si hem Glori, wan Grangglori, dissi fitti da wan Pikien va Tatta Gado, foeloe va Gnade en Troefasi.[1]

The broken Negro-Spanish of *Curaçao* which belongs to the Dutch in the Caribbean Sea. See J. J. Putman: "Gemeenzame Zamenspraken" (1853).

Matt. v. 1-12. (1.) Anto ora koe Hezoes a mira toer e heende nan, eel a soebi oen seroe; deespuees eel a sienta i soe desipel nan a bini seka dje. (2.) I eel a koemisa di papia i di sienja nan di ees manera. (3.) Bieenabeentoera ta e pober nan na spiritoe, pasoba reina di Dioos ta di nan. (4.) Bieenabeentoera ta ees nan, koe ta jora, pasoba lo nan bira konsolaa. (5.) Bieenabeentoera pasifiko nan, pasoba lo nan erf tera. (6.) Bieenabeentoera ees nan, koe tien hamber i sedoe di hoestisji, pasoba lo nan no tien hamber i sedoe mas. (7.) Bieenabeentoera ees nan, koe tien mizerikoordia, pasoba lo heende tien mizerikoordia koe nan. (8.) Bieenabeentoera

[1] *Cfer.* Wullschlaegel: "Kurzgefasste Neger-Englische Grammatik" (1854), and "Deutsch-Neger-Englisches Wörterbuch, nebst einem Anhang Neger-Englische Sprüchwörter enthaltend" (1856).

ees nan, koe ta liempi di koerasoon, pasoba lo nan mira Dioos. (9.) Bieenabeentoera ees nan, koe ta perkoera paas, pasoba lo nan ta jama joe di Dioos. (10.) Bieenabeentoera ees nan, koe ta persigido pa motiboe di hoestisji, pasoba reina di Dioos ta di nan. (11.) Bosonan lo ta bieenabeentoerado, koe ta koos nan Zoendra i persigi bosonan, i koe ta koos pa mi kausa nan ganja toer soorto di maloe ariba bosonan. (12.) Legra bosonan i salta di legria, pasoba bosonan rekompeensa ta grandi deen di Ciëloe; pasoba nan a persigi di ees manera e profeet nan, koe tabata promee koe bosonan.

*Indo-Portuguese*, spoken in Ceylon and on the Indian coast by the mixed descendants of Dutch and Portuguese, 50,000 of whom are to be found in Ceylon. It omits cases, verbal suffixes, &c., and uses auxiliary particles, being a mixture of Dutch, Portuguese, and Indic.

St. John i. 1-14. (1.) Ne o começo tinha a Palavra, e a Palavra tinha junto de Deos, e a Palavra tinha Deos. (2.) O mesmo tinha ne o começo junto de Deos. (3.) Todas cousas tinha feitas de elle; e sem elle naõ tinha feita ne huã cousa que tinha feita. (4.) Em elle tinha vida; e a vida tinha o Lume de homens. (5.) E o Lume te luze em escuridade; e a escuridade nunca ja conhece aquel. (6.) Tinha hum homem mandado de Deos, quem seu nome tinha Joaõ. (7.) O mesmo ja vi por hum testimunha, pera da testimunho de o Lume, que todos de elle pode cré. (8.) Elle naõ tinha o Lume, mas tinha mandado pera da testimunho de o Lume. (9.) Aquel tinha o Lume verdadeiro, que te alumia per cada hum homem quem ta vi ne o mundo. (10.) Elle tinha ne o

mundo, e de elle o mundo tinha formado, e o mundo per elle nunca ja conhece. (11.) Elle ja vi per seu mesmo povo, e seus mesmos nunca ja recebe per elle. (12.) Mas per todos quantos quem ja recebe per elle, per ellotros elle ja da poder pera fica os filhos de Deos, até, per ellotros quem ja cré em seu nome: (13.) Quem tinha nacido, nem de sangue, nem de a vontade de a carne, nem de a vontade de homem, mas de Deos. (14.) E a Palavra tinha feita carne, e ja mora entre nos (e nos ja olha sua gloria, a gloria como de o unigenito de o Pai), enchido de graça e verdade.

It is needless to give a specimen of the Judæo-Spanish of Turkey, which the Turkish Jews regard as their sacred language, since it is merely the old Spanish of three centuries ago, moulded in accordance with Hebrew idiom. Similarly the sacred language of the Polish Jews is old German, mixed with Hebrew words and idioms.

Negro-Portuguese, originally introduced into Surinam by Portuguese Jews, is now spoken only by one tribe of the free Bush Negroes, the Saramaccans, on the Upper Surinam, who call it *Djoe-tongo*, "Jews' language." There are no printed specimens of it.

Negro-French, spoken in Trinidad, San Domingo, Guadaloupe, and Martinique, is explained in the excellent "Theory and Practice of Creole Grammar" of J. J. Thomas (1869), and in a "Catéchisme en la Langue Créole" (1842). Here is a specimen :—

St. John iv. 6. Apouésent, pîts Jacob té nans place là. Jésis, con li té lasse épîs route li, assise bôd pîts la ; et cété coté mindi con-ça. (7.) Yon femme, gens Samarie, vinî haler dleau. Jésis dîe li : Bâ-moèn boèr. (8.) Dis-

cipes li étant té aller nans boûq la gañèn povisions. (9.) Alosse, femme Samaritaine la dîe li : coument fair ous, qui yon Juif, ca mander dleau poû boèr nans lamain moèn, qui yon femme Samaritaine? pâce Juifs pas ca méler épîs gens Samarie.

## CHAPTER IV.

### PHONOLOGY AND SEMATOLOGY.

"Sind doch die Lautgebilde der Vorhang, hinter welchem das Geheimniss der Begriffe steckt, das vom Sprachforscher Aufdeckung erwartet."—POTT.

THE skeleton of language is formed by those phonetic utterances into which significancy must be breathed before they can become living speech. They are the outward vestment of the thought that lies within, the material in which the mind of man finds its expression. Thought, it is true, may be conveyed through gesture and picture-writing as well as through phonetic utterance, but in phonetic utterance alone does it find a vehicle sufficient and worthy of itself. Like the marble in the hands of the sculptor, however, sound not only embodies meaning; it also limits and defines the expression of that meaning, and confines it within barriers which it may not pass. The language of man is conditioned by his physical structure and organization.

What anatomy is to physiology, that phonology is to the science of language. Comparative philology is based upon phonetic laws; the relation of words, of forms, of dialects, and of languages is determined by the laws which govern their outward shape. Languages are

grouped together because they have a common stock of roots and a common grammar; and the identity of roots and of grammar is on the outward side an identity of phonetic sound. The laws of scientific philology are for the most part the laws which regulate the change of sounds, and these are dependent on the physiological structure of the organs of speech. The priority of sounds, of words, and even of dialects, is frequently to be discovered by an appeal to the formation of the throat and lips. We may lay down the general rule that the harder sound passes into the easier, rather than the easier into the harder; but it lies with phonology and physiology to determine which is really the harder sound. It is phonology which has created the modern science of language, and phonology may therefore be forgiven if it has claimed more than rightfully belongs to it or forgotten that it is but one side and one branch of the master science itself.

The empirical laws of the interchange and equivalence of sounds in a special group of tongues are ascertained by comparative philology; the explanation of these laws, the assignment of their causes, the determination of the order followed by phonetic development or decay, belong to the province of phonology. Phonology touches on the one hand upon physics in so far as it is concerned with the analysis of the sounds of speech, and on the other upon physiology in so far as it studies the nature and operations of the vocal organs themselves. It is, in fact, as much a branch of physiology as it is of the science of language, dealing as it does with a special department of physiology; but it passes beyond the province of phy-

siology when it investigates the nature of the sounds produced by the activity of those organs with which alone physiology is concerned. But whether it touches upon physiology or upon physics, phonology is equally one of the physical sciences, pursuing the same method and busied with the same material. So long as philological research is purely phonological, so long have we to do with a physical science; it is only when we turn to the other problems of glottology, only when we pass from the outward vesture of speech to the meaning which it clothes, that the science of language becomes a historical one. The inner meaning of speech is the reflection of the human mind, and the development of the human mind must be studied historically. Those, therefore, who refuse to regard glottology as other than a physical science, take as it were but a half-view of it; they are forced to confine themselves to its outward texture, to be content with a mere description of the different families of speech and their characteristics, like the botanist or the zoologist, and to leave untouched the many questions and problems which a broader view of the science would present to them. It is true that even upon the broader view, the method of the science is as much that of the physical sciences as the method of geology; it is also true that the doctrine of evolution has introduced what may be termed the historical treatment even into botany and zoology; but nevertheless linguistic science as a whole must be included among the historical ones, unless we are to narrow its province unduly and identify it with the subordinate science of phonology. The physical science will give us the skeleton of speech,

the dry bones of the anatomist's dissecting-room; for life and thought we must turn to history.

We must not forget, however, that we can understand the past only by the help of the present. An antiquarian study of philology will enable us to trace the history of words and forms, to group languages into families, and to discover the empirical laws of phonetic change; to interpret and verify these laws, to correct our classifications and conclusions, to learn what sounds really are, we must examine the living idioms of the modern world. The method of science is to work back from the known to the unknown, and if we are to study glottology to any purpose and to extend and confirm its generalizations, it must be by first observing and experimenting on actual speech. We must begin by disabusing our minds of the belief that words consist of letters and not of sounds; on the contrary, letters are at best but guides to the sounds they represent, and only the experienced student of actual sounds is in a position to determine their real value. Phonology stands at the threshold of linguistic science, and those alone who have honestly wooed and won her can enter into the shrine within. The physical science leads upward to the historical science; the key to the past is to be found in the present.

Now the first question we have to ask is, What is a sound? The most general answer we can give to this question is that a sound is the impression made upon the organs of hearing by the rapid swinging of an elastic body in an elastic medium, which is usually the air. The vibrations set on foot by this rapid swinging reach the ear under the form of waves, and these may succeed

each other at either irregular or regular intervals. In the first case we have what is called a noise—a source of constant delight to the savage and the infant, but exceedingly painful to the sensitive ear. In the second case musical tones are produced, among which must be counted the utterances of articulate speech. Tones, or rather full tones (as opposed to partial ones), are distinguished from each other by their (1) strength or loudness, their (2) height or pitch, and their (3) quality or *timbre*. The strength depends upon the amplitude of the vibrations produced in the elastic medium, the pitch on the number of the vibrations in any given space of time, or, what amounts to the same thing, on the length of time occupied by each vibration, and the *timbre* (also called "tone") on the form assumed by the vibrations or waves of sound, that is to say, on the relations of the vibrations one to the other.

There are but few musical instruments that produce a simple tone; in fact, among those usually employed the tuning-fork is almost the only one from which we can hear it. All other musical tones result from a combination of simple, or as they have sometimes been termed, "partial" tones, whose double vibrations or "swing-swangs," as De Morgan named them, stand to one another in the relation of 1, 2, 3, 4, &c. The Pythagoreans of the fourth century B.C. were already acquainted with the fact that the respective lengths of the fundamental note with its octave, fifth and fourth, must be as one to two, as two to three, and as three to four.[1] This funda-

[1] Helmholtz: "Die Lehre von den Tonempfindungen," 3rd edition (1870).

mental note, or deepest partial tone, is the starting-point from which we ascend upwards; it forms the standard by which the pitch or ascending scale of sounds is measured, while the remaining partial tones go by the name of the harmonics or upper tones. The partial tones coalesce so closely into a full tone as almost to escape the notice even of the trained ear, but their co-existence may be easily detected by the help of resonatory instruments. The full tones themselves, however, which we shall henceforth call tones or notes,[1] may not be able to make the impression upon the nerves of hearing needful for conveying a sense of sound to the brain within. The tone produced by any number of vibrations less than sixteen a second is wholly inaudible except by the help of the microphone, and even this number of vibrations brings out so deep a pitch as to be scarcely perceptible.[2] "For practical purposes," says Professor Max Müller,[3] "the lowest tone we hear is produced by thirty double vibrations in one second, the highest by 4,000. Between these two lie the usual seven octaves of our musical instruments. It is said to be possible, however, to produce perceptible musical tones through eleven octaves, beginning with sixteen and ending with 38,000 double vibrations in one second, though here the lower notes are mere hums, the upper notes mere clinks." The sense of sound is not stronger

[1] Speaking accurately a musical note is a tone only in so far as its quality or timbre is taken account of.

[2] The fact can easily be tested by Captain Galton's whistle. According to some authorities, however, it requires less than eight and more than 24,000 vibrations per second, to produce no effect upon the auditory nerve.

[3] "Lectures," ii. 8th edition (1875), p. 111.

and more trustworthy than the other senses of sight, of touch, of taste, of smell. On all sides we are strictly limited by the conditions which surround us, and even science, though she may assist the senses by instruments which enlarge and extend their powers, reaches at last a boundary which she cannot pass. The world is a vast sounding-board, even if we know it not; the infinitesimally small and the infinitesimally great alike lie beyond our apprehension. Above and below there is infinity, and "the music of the spheres," of which the old Greek thinkers dreamed, is not, after all, so very far removed from the truth that science has revealed to us. The notes or partial tones that we hear are the purely mechanical product of a definitely determined number of double vibrations, and the variations in pitch we notice between them are due to the length of time occupied by these vibrations. If, for instance, one note takes half the time another does, if the number of oscillations in the second is twice that required by the fundamental note, the interval between the two notes is what is called an octave. If, again, the proportion between the two notes is as three to two, three waves of the one occupying the same time as two waves of the other, the interval between them is a fifth; while a major sixth represents the interval between two notes, which stand to each other as five to three. Consequently, if we divide into two equal parts a tense cord, which, when made to vibrate throughout its whole length, yields its fundamental note, and vibrate either part, we shall hear the octave above that fundamental note. In other words, the number of the vibrations of any two cords having the same degree

of tension is (other things being equal) inversely as their length. In the case of two elastic rods or rigid tongues, the number of vibrations is inversely as the square of the length; hence an elastic rod six inches long will vibrate four times more rapidly than a rod of the same material and equal thickness twelve inches long. The number of vibrations is also dependent on the thickness and tension of the cords or rods, being inversely as the thickness of the cords and directly as the thickness of the rods, and in both cases proportional to the square root of their tension. It must be remembered that membranous tongues like our own *chordæ vocales*, act in accordance with the same general law as tense cords and not as elastic rods.

Every body capable of producing sound has a tone peculiar to itself; a stringed instrument, for instance, and a trombone differ in the tones they give forth, and we may even divide the air into definitely circumscribed portions, or "chambers of resonance," each of which will have its own peculiar tone. The form assumed by the double vibrations, the ultimate causes of sound, determines these differences in the quality of the tones we hear. Sometimes the vibrations will run in zigzag course through the elastic medium; sometimes their shape will be rounded; sometimes, again, it will be angular. The simplest wave of sound, that produced by a tuning-fork, flows in a succession of spiral lines, and the partial tones or harmonics of other instruments may also be assumed to be so many simple waves of sound of the same form. In fact, even if a harmonic may be resolved into a combination of other harmonics or partial tones, and these again

into yet simpler and fainter harmonics, we must come at last to simple notes, corresponding with the note emitted by the tuning-fork and composed of vibrations that have the same spiral shape. It is the varying amalgamation of these simple spirals that occasions the varying forms of the full tones; each full tone (the simple tone alone excepted) being made up of harmonics and consequently of their spirals in different proportions, and in this difference of mixture lies the difference of quality in the tones we hear.

Ohm, Fourier, and others first proved that the simple pendulous oscillation is the only vibration unaccompanied by harmonics, and that all full tones can be decomposed into the simple vibrations of which they consist. Helmholtz has now ascertained the exact form of many of these compound tones, as well as the conditions under which the by-notes or harmonics are present or absent. In the violin, for example, as compared with the guitar or the pianoforte, he finds that the primary note is strong, the partial tones from two to six weak, and those from seven to ten clearer and more distinct.[1] He was first led to detect the variations of form they assume by applying a microscope to the vibrations of different musical instruments, and the fact was further confirmed by the discovery made by himself and Donders that the sounds articulated by the human voice are composed of vibrations which each assume their own special shape. The phonautographs since constructed by Scott and König actually delineate the forms of these waves of sound

[1] Helmholtz: "Die Lehre," &c., p. 143.

either on a plate of sand, or in the flickerings of a gas-flame, or in the movements of a writing pencil, and the microscopic examination of the impressions produced by articulate sounds in the tinfoil of the phonograph shows a series of indentations of various but determinate shapes.

The number of forms which can be assumed by the waves of sound is naturally limited in kind, while various bodies may emit sounds containing the same harmonic or partial tone. The quality or timbre which depends on the relation and strength of these partial tones, and of the composite form assumed by the sum of their vibrations, constitutes what we have called a peculiar tone. This, as we have seen, is a simple one in the case of the tuning-fork, but in other cases it forms part of a full or complex group. We may find an illustration in the characteristic lines of light which we learn from the spectrum analysis are projected by substances; where we are dealing with a simple elementary substance, the line thrown upon the spectrum is correspondingly simple; where, on the other hand, the substance is compound, its spectrum also is compound, reflecting the several chemical elements of which it is made up. The simple spectrum answers to the simple harmonic or partial tone with its varying pitch and invariable form, just as the compound spectrum answers to the full note or peculiar tone with its characteristic quality and diversified grouping of partial tones. Now, if a body which has a certain peculiar tone is struck by a sound which contains a partial tone in any way similar to this peculiar tone, the body in question vibrates in sympathy, and we hear what is known as

a by-note or harmonic. This by-note reacts upon the partial tone which has caused it, strengthening the partial tone and so modifying the quality of the complex sound. If, for instance, we play a note such as C on a violin, the strings of a piano representing C as well as the harmonics allied to it will vibrate in sympathy. Of course the more elastic the body which is struck, the louder and clearer will be the by-note, and of all elastic bodies none are better than those chambers of resonance into which we can divide the air. Such chambers of resonance are afforded by wind instruments of all kinds, whose shape determines the peculiar tone they are to emit. If the instrument is so constructed as to change its shape at will, now round, now straight, now broad, now narrow, the number of different chambers of resonance, and consequently the number of different peculiar tones, may be almost indefinitely increased.

It is this variability of form which makes the human throat such a marvellous instrument for the production of manifold sounds. Like most chambers of resonance, it has the hollow reed-like shape which connects it most readily with the primary source of sound. In analyzing the material of language we must never forget that we have to do with the most perfect wind instrument that exists, a wind instrument, too, of infinite pliability and power of change, and thus in constant and ready sympathy with the harmonics that are struck by the other organs of speech.

We must now pass from the science of acoustics to the science of physiology. We have seen what are the conditions under which musical notes are produced, we have

also seen that among these musical notes the utterances of articulate speech have to be classed; we have next to examine into the nature and conformation of the physical organs to which these utterances owe their origin. In the first place, the organs of speech may roughly be divided into three groups:—the breathing apparatus, or lungs, the *trachea* or windpipe with larynx and bronchial tubes, and the chamber of resonance or mouth and nose. The lungs provide the material which is worked up into inarticulate noises and articulate sounds by the *trachea* and chamber of resonance. As long as the breath flows out of the throat and mouth quietly and without interruption language of any sort is out of the question. The organs of speech are at rest, and all that can be done is to propel the breath with greater or less violence. We may breathe hard through the mouth, we may even make noises like that of snorting through the nose, but as yet there is nothing which can constitute a starting-point for articulate speech.[1] Mere *breath*, as distinguished from *voice*, only supplies the material out of which words and sentences may afterwards be created. Voice is breath, acted upon and excited into waves of sound by the organs of the throat and mouth; a larger quantity of air than is needed for simple breathing is rapidly taken into the lungs, and immediately expelled in intermittent gusts, but with varying degrees of force. Almost all the sounds we utter are accompanied by exspiration; only such sounds as an occasionally mispronounced *ja* in Germany

[1] Serpents have no voice in the proper sense of the word, as they have no vocal chords; the hissing sounds they produce being caused by a mere forcible breathing through a soft glottis.

or our own surprised *Oh!* are produced while the breath is being drawn in. Experiment will at once show how difficult it is to pronounce a sound at the same time that this is being done.

The breath, then, is the passive instrument through which language is formed by the trachea and chamber of resonance. This trachea is a long cartilaginous and elastic pipe ending in the bronchial tubes, through which the air is admitted to the lungs. Its upper part is termed the larynx, consisting of five cartilages and situated in the throat. The lowest of these cartilages is the *cricoid*, which resembles a ring with the broad flat surface turned downwards. Over this comes the *cartilago thyroidea* or Adam's apple, with two wings which partly enclose the *cartilago cricoidea*, and form a link between it and the *os hyoideum*,[1] or bone of the tongue, which has somewhat of the shape of a horseshoe. The space surrounded by these two cartilages may be compared with a hollow reed, out of the back part of which a piece has been cut. From the base of the latter and the upper rim of the *cartilago cricoidea* spring two small pyramidal cartilages, the arytenoids, which resemble the horns of an ox and almost touch one another. Their roots are connected with one another and with the cricoid and thyroid cartilages by the so-called *processus vocales*, which in spite of their name have little to do with the formation of speech. The horns of the arytenoids serve to unite two elastic bands to the opposite surface of the thyroid cartilage. These bands are formed of

[1] That is, "U-shaped bone."

muscle enveloped with mucous membrane, and are the famous *chordæ vocales* upon which as upon the strings of a piano the manifold modulations of human language are played. So long as they remain, the other vocal organs, not excluding the tongue, may be removed without depriving the patient of the faculty of articulate speech.[1] Their length differs in men and women, in children and adults; the average length in men being about one-third greater than in women, and occasioning the different pitch of male and female voices.[2] The two *chordæ vocales* run obliquely across the cavity enclosed between the thyroid cartilage and a small projection on the front part of the arytenoid cartilage, an aperture which is called the glottis, or *glottis vera*. They can be relaxed or contracted at will by the muscles of the cartilages to which they are attached, and a portion of them can even be deadened by pressure from a small protuberance on the under side of the epiglottis. The glottis itself is divided into two parts, one the space between the vocal chords and the lateral thyro-arytenoid and crico-arytenoid cartilages, the other the triangular space between the vocal chords themselves, the latter allowing a passage for breath, the former a passage for voice. Both spaces can of course be narrowed or enlarged by the contraction or relaxation of the vocal chords, and the junction of the latter will close one or both altogether. It is in this

[1] Of course, if an opening is made in the trachea, voice is impossible unless it is closed, and division or injury of the laryngeal nerves will equally destroy voice by paralyzing the muscles of the vocal chords.

[2] In men the average length is about eleven lines.

secret chamber that the phonetic substance of speech is moulded into shape; the vibrations of the *chordæ vocales* in the breath of the glottis are the ultimate cause of syllables and words.

Above this chamber of the voice the trachea or windpipe again widens, and a second chamber is formed by two cavities on either side, called the ventricles of the larynx (the *ventriculi Morgagni*). Each cavity leads, at the back, into a pouch of the mucous membrane called the laryngeal sac and covered with sixty or seventy mucous glands, the secretion from which acts like oil on a piece of machinery by keeping the vocal chords and the surrounding parts in a moist condition. Stretched across the cavities are two thick ligaments, the false vocal chords, like the true *chordæ vocales* below them. They differ from the vocal chords in having no muscle of their own, but like the latter can contract or enlarge at pleasure the false glottis (*glottis spuria*), the space, that is, which is enclosed between them. The false glottis, which, like the false vocal chords, takes no part in the creation of language, is shut by an elastic cartilage, called the *epiglottis*, the lower point of which is attached to the thyroid cartilage immediately above the *chordæ vocales*, while the upper end broadens out like a leaf and falls over the fissure of the false glottis. This corresponds with the entrance of the larynx. The upper surface of the epiglottis is concave, and in swallowing it is allowed to drop upon the larynx. At other times it may be depressed over the false and true vocal chords.

Such is the machinery whereby breath from the lungs is transformed into voice in its passage through the

windpipe; and voice is next taken up by what we have termed the chamber of resonance and modified in various ways. If we may call the glottis the manufactory of voice, we may call the mouth and nose the manufactory of the articulate sounds into which voice is divided. At the back of the epiglottis lies the *pharynx*, leading into the *œsophagus*, and the pharynx is bounded on the side of the mouth by the posterior pillar or *arcus pharyngo-palatinus*, opposite to which is the anterior pillar or *arcus glosso-palatinus*. Betwen them are the tonsils, and above these again the *uvula*, a sort of pendent valve which hangs downwards from the top of the anterior pillar towards the posterior pillar behind. The uvula is attached to a piece of yielding muscle known as the soft palate or *velum palati*, which with the uvula separates the throat from the entrance to the nostrils. The soft palate can move either backwards or forwards; in pronouncing the guttural (*ng*) for instance, it is pressed forward against the tongue, shutting off the throat; in pronouncing the vowels, on the other hand, it is pressed backward, and so cuts off the flow of breath to the nose. Above the soft palate comes the arch of the hard palate or roof of the mouth, and below this the tongue with its two roots and pointed tip. The teeth that enclose the mouth, along with their alveolars that form the front wall of the hard palate, have much to do with the formation of specific sounds, while it is hardly necessary to refer to the phonological importance of both nose and lips. As is well known, a leading characteristic of cultivated English is the little use it makes of the latter.

It is now time to consider the precise parts played by

these different organs of speech, in producing the various elements of spoken language. We must begin by putting out of sight all inarticulate sounds or noises, such as the clicks of the Bushman or the Hottentot, which have entered into the composition and framework of actual speech. Such inarticulate sounds are but the stepping-stones to real language, the first steps of the ladder, as it were, which were eventually to lead to articulate words. They are the natural cries of man like the natural cries of the animals from which they in no way differ; and just as on the one side the barking of the dog and the mewing of the cat are said to be attempts to imitate the human voice, so on the other hand the inarticulate cries of the *infant* or "non-speaker" are on the same level as the roar of the lion or the shriek of the cockatoo. We are told that the cynocephalic ape of the Upper Senegal, whose form is depicted on the monuments of ancient Egypt, utters clicks which sometimes contain a distinct *d*,[1] and the Bushmen themselves show a true instinct when they make the beasts in their fables talk not only with the clicks of the Bushman dialects, but even in the case of some animals with clicks that do not otherwise occur.[2]

[1] Faidherbe: "Essai sur la Langue Poul," in the "Revue de Linguistique," January and April, 1875.

[2] Bleek: "A brief Account of Bushman Folklore, and other Texts," p. 6. "A most curious feature in Bushman folklore is formed by the speeches of various animals, recited in modes of pronouncing Bushman, said to be peculiar to the animals in whose mouths they are placed. It is a remarkable attempt to imitate the shape or position of the mouth of the kind of animal to be represented. Among the Bushman sounds which are hereby affected, and often entirely commuted, are principally the clicks. These are either converted into other consonants, as into labials (in the lan-

If we watch the first endeavours of children to speak, we may discover inarticulate noises gradually becoming articulate sounds with definite meanings, and we may even trace a recollection of the first efforts of man to create a language for himself in the guttural aspirates heard for instance in some of the Semitic dialects. Indeed, the name given to the hard breathing (*h*) by the Greeks, πνεῦμα δασύ or "rough aspirate," reminds us of the guttural noises, not yet phonetic sounds, made by the child; in forming this sound we jerk out the breath at the same time that we narrow the glottis, adding if we like various degrees of hoarseness by further stopping its free flow. The glottal catch, which is heard in Danish after vowels, and according to Mr. Bell is substituted in the Glasgow pronunciation for "voiceless stops," is really a mere cough. Even the *spiritus lenis* or soft breathing, heard before a vowel, partakes in some measure of the nature of a noise. It is true that the rough breathing cannot be sung while the soft breathing may be; but this is because in the case of the latter the breath is checked near the vocal chords and

guage of the Tortoise), or into palatals and compound dentals and sibilants (as in the language of the Ichneumon), or into clicks otherwise unknown in Bushman (as far as our present experience goes), as in the language of the Jackal, who is introduced as making use of a strange labial click, which bears to the ordinary labial click a relation in sound similar to that which the palatal click bears to the cerebral click. Again, the Moon—and it seems also the Hare and the Anteater—substitute a most unpronounceable click in place of all others, excepting the lip click. Another animal, the Blue Crane, differs in its speech from the ordinary Bushman, mainly by the insertion of a *tt* at the end of the first syllable of almost every word."

can therefore be intoned. Professor Max Müller is doubtless right in holding that all that the Greeks meant by πνεῦμα ψιλόν as opposed to πνεῦμα δασύ was "a negative definition of another breath which is free from roughness,"[1] just as the ĕ-psilon is negatively contrasted with the *êta*. Neither breathing was regarded as constituting as yet a true sound or "voice."

The true sounds of language, however, were distinguished but roughly and imperfectly one from the other. Plato, in his Kratylus, divides them into φωνήεντα or "vowels," and ἄφωνα or "mutes," these last being further subdivided into semi-vowels which are neither vowels nor mutes (φωνήεντα μὲν οὔ, οὐ μέντοι γε ἄφθογγα) and ἄφθογγα or real mutes. The term ἄφωνα, mutes, afterwards came to be restricted in its sense as a simple equivalent of Plato's ἄφθογγα, its place being taken by the term σύμφωνα or "consonants," letters, that is to say, which must be sounded along with a vowel. These consonants were next classed as ἡμίφωνα or semi-vowels (*l*, *m*, *n*, *r*, and *s*), ὑγρά or "liquids" which covered all the semi-vowels with the exception of *s*, and ἄφωνα or "mutes." The mutes fall into three classes, the ψιλά or "bare" (*k*, *t*, *p*), the δασέα or "aspirates" (*kh*, *th*, *ph*) and the μέσα which stood, as it were, "between" them. The Latin translation of the latter term has given us the *mediæ* of modern grammars.

Far more thorough-going and scientific were the phonological labours and classification of the Hindu *prâtiśâkhyas*. Instead of starting from written speech like the Greek grammarians, they had to do with an orally-delivered

[1] "Lectures," ii. p. 141 (8th edition).

literature, and hence while the Greeks never got beyond the belief that the tongue, teeth, and lips were the sole instruments of pronunciation, the Hindus had carefully analyzed the organs of speech some centuries before the Christian era, and composed phonological treatises which may favourably compare with those of our own day. They knew, for example, that in sounding the *tenues*, or hard letters, the glottis is kept open, while in sounding the *mediæ*, or soft ones, it is closed; they knew also that *e* and *o* were diphthongs analyzable into *a*+*i* and *a*+*u*; and they explained *k* and *g*, *p* and *b*, as formed by complete contact of the vocal organs. They had noted the *repha* or "Newcastle burr," and had divided the nasals into their several classes. The names they gave to the various sounds, and the groups into which they were classified, were descriptive of their mode of formation, like the names similarly applied by modern phonologists. Thus the guttural sibilant formed near the root of the tongue (χ) was called *Jihvâmûlîya*, "the tongue-root letter," and the labial sibilant (φ) *Upadhmânîya*, "to be breathed upon." The consonants were classed both according to the place where they were formed, and according to their *prayatna*, or "quality," the mutes and nasals, for instance, being formed by "complete contact" of the vocal organs, the semi-vowels by "*slight* contact" (*îshat sprishṭa*), the sibilants by "slight opening" (*îshad vivṛita*), and the vowels by complete opening. A controversy even sprung up among the grammarians as to the extent of this opening of the organs. "Some ascribe to the semi-vowels *duḥspṛishṭa*, imperfect contact, or *îshadaspṛishṭa*, slight non-contact, or *îshadvivṛita*, slight opening; to the

sibilants *nemaspṛishṭa*, half-contact, *i.e.*, greater opening than is required for the semi-vowels, or *vivṛita*, complete opening; while they require for the vowels either *vivṛita*, complete opening, or *aspṛishṭa*, non-contact."[1]

Leaving the speculations of the past, let us now pass on to the results which have been obtained by modern research. Thanks to the labours of men like Alexander Ellis, Melville Bell, Helmholtz, Czermak, Brücke, Sweet, and others, the mechanism of speech has been fairly settled; and though many points are still open to discussion, the main facts have been thoroughly ascertained and adequately explained. We have learnt the real nature and causes of those phonetic elements of speech which the old grammarians first tried to separate and classify; we have cleared away the confusion from which even the Vedic scholars of India could not wholly escape, and have discovered that in phonology as elsewhere, the convenient systems of practical life do not bear a close scientific investigation. Even the ordinary distinction of vowels and consonants is exposed to more than one objection. It rests not upon the essential character of the sounds themselves, but upon mere differences of function, and its advocates have to invent a series of semi-vowels or semi-consonants, a name which of itself indicates how incomplete and unsatisfactory the distinction must be. The distinction, indeed, has a basis of fact, but the fact is one which has been misapprehended or overlooked.

[1] Max Müller: "A Sanskrit Grammar for Beginners," 2nd edition, p. 23, *note*. See Mr. Ellis's examination of the "Rules of the Indian Phonologists," as given by Whitney ("Atharva-Vêda Prâtiçâkhya), in "Early English Pronunciation," pt. 4, pp. 1336-1338.

Apart from the respiratory organs which supply the fuel, the chief agents in the manufacture of speech are the throat and mouth. The breath, as it makes its way upward, passes the vocal chords, causing these to vibrate; and while the forms taken by the vibrations determine the quality or timbre of the sound to be uttered, the very essence of a vowel, for instance, consisting in the quality of the voice, the number of the vibrations determines its pitch.

In the pitch we have to distinguish between two things, the chest or true notes and the head or falsetto notes, respectively due to the position and action of the vocal chords. In the chest notes the vocal chords are stiffened and laid side by side, so that when the flow of breath comes from the lungs, they are forced aside for a moment, to spring back the next and cause a series of intermittent puffs of breath. In the falsetto notes, on the other hand, the muscles of the vocal chords are not contracted, nor is the glottis wholly closed; hence only the inner membrane of the chords is set in motion by the breath, and instead of actually meeting one another, the chords merely narrow or enlarge the aperture of the glottis.[1]

[1] See Sievers: "Grundzüge d. Lautphysiologie" (1876), p. 19. This explanation of the causes of this difference between the two kinds of voice (true and falsetto) is due to the observations of Garcia. Various theories had previously been put forward to account for it. J. Müller thought that in producing chest notes, the whole breadth of the vocal chords vibrated, only their thin inner margins in producing falsetto notes. Mayo and Magendie held that the falsetto notes are produced by the vibrations of only one-half the length of the vocal chords, when the glottis is partially closed; G. Weber that they are due to the vibration of the chords in segments, separated by nodal points, so that harmonics of the fundamental note

The forms assumed by the vibrations depend, of course, on the anatomical structure of the vocal chords, their greater or less elasticity, and the like. Besides quality and pitch, however, we must also take account of the *intensity* of the sound, this intensity or emphasis arising from the force with which the stream of breath is expelled from the lungs, and the corresponding strain of the muscles of the trachea and vocal chords.

In whispering, the amount of intensity is considerably diminished, though the pitch is quite as distinct as in loud voice. The glottis is not completely closed, but the upward flow of breath is not strong enough to do more than produce a sort of friction, or imperfect vibration in the vocal chords. The latter incline towards each other on the side furthest from the arytenoids, and so give the glottis a triangular shape; the larynx, however, may also assume other forms. Hence it is that we may distinguish three kinds of whispered voice. We may either have a soft whisper, where the whole glottis is narrowed, and the force with which the breath is emitted is very slight; or a medium whisper, where the force is greater, and only that part of the glottis left open which lies between the arytenoids; or a loud whisper, where the force is con-

are formed. Pétrequin and Diday maintained that they are produced by the vibration of the air itself in the glottis, without any movement on the part of the vocal chords, while Wheatstone thought that they are formed by the division of the air in the trachea into harmonic lengths, the tone produced by the vocal chords being thus reciprocated, since, besides vibrating by reciprocation with a sonorous body, the vibrations of which are isochronous with its own, a column of air may also vibrate by reciprocation in its several lengths, the number of its vibrations being in this case a multiple of those of the sonorous body.

siderable, the false vocal chords are in close contact, and the epiglottis bent stiffly downwards, allowing but a very small opening for the escape of the breath. A loud whisper is rare; a medium whisper the most common. Sighing, it may be added, is produced above the larynx, which takes no part in its production; when the vocal chords are brought into action, the sigh becomes a groan.

It needs but a short experience to discover the numberless varieties of voice that may exist, and it is not uncommon for a blind man by this means not only to distinguish the age and sex of those he meets, but even to recognize his friends. In fact the human voice, from the deepest male to the highest female voice, has a range of nearly four octaves, the lowest note being E, produced by 80 vibrations per second, and the highest C, produced by 1,024 vibrations per second. But Vierordt has shown that in extreme cases its range is nearly $5\frac{1}{2}$ octaves, from F (produced by 42 vibrations) to A (produced by 1,708 vibrations). In the same individual it is rare for the range of the voice to be more than two octaves, and in ordinary speech it is generally only half an octave. These different notes are due to changes in the length and tension of the vocal chords and their approximation or separation, the lower notes, for instance, requiring them to be longer, looser, and more widely separated than in the case of the higher notes, and consequently to admit a larger but less rapid current of air. It has been calculated that 240 different states of tension of the vocal chords must be accurately producible at will, in order to cause all the notes and intermediate tones heard in a perfect voice of ordinary range. Madame Mara could effect no

fewer than 2,000 changes. The four chief varieties of the voice—the bass, the tenor, the contralto, and the soprano —are dependent on differences of pitch, that is ultimately on differences in the length of the vocal chords. The bass and the tenor with the intermediate baritone characterize the man, the contralto and soprano with the intermediate mezzo-soprano characterize the woman. The lowest note of the contralto is about an octave higher than the lowest note of the bass, the highest soprano about an octave higher than the highest tenor. Sometimes, however, we find a bass voice singing the higher notes of a tenor, and yet at the same time remaining bass. The reason of this is that the various kinds of voice differ not only in pitch, but also in timbre. This is caused by differences in the vocal organs. The larynx of women is smaller than that of men ; the angle formed by it in front is less acute, and the cartilages are softer. The voice of boys is either contralto or soprano, like that of women, though generally different in tone. There is, however, no difference in the larynx of either boys or girls up to the age of puberty, when in the case of boys it rapidly increases in size, and the vocal chords become longer, thicker, and coarser.

The elevation or depression of the larynx exercises a certain modifying influence upon the voice. When the voice is raised from a low to a high pitch, the whole larynx, together with the trachea, is lifted towards the base of the skull. The exact way, however, in which the trachea and the parts above the glottis affect the voice is by no means clear. The thyro-arytenoid muscles, which extend from the arytenoids to the recessed angle of the thyroid cartilage, have much to do with the production of these higher

tones. They narrow the diameter of the larynx just below the vocal chords, and the diminution of the calibre of the wind-tube nearest the chords thus occasioned heightens the pitch. On the other hand, the pitch is made to fall by semitones when the tube is lengthened. In short, the greater the strength of the current of air the higher is the pitch. The depression of the larynx produces the so-called veiled voice (*vox clandestina*), the larynx itself being then covered by the entire pharynx, the root of the tongue approximated to the palate, and the voice being thus made to resound in the upper part of the pharynx under the skull.

The precise nature of ventriloquism is not quite certain. J. Müller states that it may be produced by speaking through an extremely narrow glottis, during a very slow exspiration, performed only by the lateral walls of the chest, a deep inspiration having been first taken, so as to cause the protrusion of the abdominal viscera by the descent of the diaphragm. Magendie, however, considers it to be produced in the larynx by variously modifying the voice so as to imitate the changes otherwise effected in it by distance.

The character of the voice is necessarily modified by changes in the structure of the vocal organs, whether due to old age, to weather and climate, to exhaustion, or to disease. In old age the ossification of the cartilages, the diminution of muscular and nervous power, and the degeneration of the larynx, make the voice weak, tremulous, and "piping." In damp chilly weather the voice is often lowered by as much as two or three notes: indeed, nothing affects it more rapidly than a damp and depressing

atmosphere. Exhaustion, again, accounts for the dissonance sometimes perceived in the voice of singers, while inflammation of the lining membrane of the larynx, and other diseases, will impair or wholly destroy the power of utterance. Loss of voice during a bad cold is a familiar instance of the latter fact.

Lisping, stammering, and other kinds of imperfect speech, are mainly due to nervous disease, stammering being usually caused by temporary spasm of the glottis. Too high a palate is another cause of irregular utterance. Dumbness, when not occasioned by deafness, as is generally the case, must be ascribed either to malformation of the vocal organs, or, more commonly, to disease of the nervous centres. Whistling, it must be remembered, results from the vibration caused by the friction of the breath against the edges of the open lips, and is wholly formed in the mouth.

The mouth, or chamber of resonance, is especially important for the creation of articulate speech. On the one side there are a great many sounds which owe to it their origin, on the other side even the sounds which are formed in the throat are necessarily modified in passing through the mouth. While *t*, *p*, or *k* have no existence until the voiced breath has reached the region of the mouth, the vowels which are formed in the throat cannot be heard in their pure and original state, but must pass through a chamber of resonance and so become more or less transformed. The throat, again, may remain passive, but the mouth must always be active. Of course the mouth forms a chamber of resonance not only for the sounds produced by the throat, but also for those produced by

itself; the larger part of the mouth, for instance, forms a chamber of resonance for the palatal *ch*. We must remember, moreover, that a sound can be more variously changed and modified, the larger and more variable is the part of the mouth which serves as a chamber of resonance, that is to say, the further back the place is in which it is manufactured. The vowels consequently come first in capability of modification, then the gutturals and dentals, and finally the labials. It has often been observed that children when learning to speak are apt to change a guttural into a dental, and say *do* instead of *go*, the guttural being formed further back than the dental, and so undergoing a greater amount of modification in its passage through the mouth.

A vowel is voice freely emitted through the throat and mouth without interruption, and modified only by the different positions assumed by the tongue. The essence of a vowel is the quality or timbre of the voiced breath, and this quality, as we have already seen, is due to the varying forms taken by the vibrating vocal chords when played upon by the breath. Necessarily, however, the quality of the voice as it leaves the throat must be always the same, since the throat is a musical instrument which possesses its own peculiar tone. What, then, is the cause of the differences we notice in the quality of the vowels? Simply the mobility of what we have called the chamber of resonance, the manifold shapes the organs of the mouth are able to assume being so many musical instruments, each with its peculiar tone. The partial tones or harmonics which go to make up the quality of the voiced breath are strengthened by the correspond-

ing peculiar tones of the several shapes assumed by the mouth, while at the same time those harmonics which do not agree with the peculiar tones are dulled or deadened. Hence a vowel is the quality of voiced breath produced by a combination of the forms of the vibrations of the vocal chords with those of the vibrating air in the various shapes taken by the chamber of resonance. The pitch of the vowel depends of course on the number of vibrations during the time of utterance, and may be detected even when the vowel is whispered. Indeed, as Donders and Helmholtz have shown, every vowel has its characteristic pitch, whether it is voiced or whispered. The different vowels can be heard in cases of aphonia, where the vocal chords are more or less paralyzed, while the *vox clandestina* is able to rise or fall. This is explained by the fact that even in whispering a certain friction is exercised on the vocal chords. If, for instance, we whisper the sound of *ü*, and then let the whisper gradually pass into a whistle, we shall always get the same tone, and Professor Max Müller thinks that the indications of musical pitch in the whispered vowels must be treated as "imperfect tones; that is to say, as noises approaching to tones, or as irregular vibrations, nearly, yet not quite, changed into regular or isochronous vibrations."[1]

The number of possible vowel-sounds is almost infinite. The vocal chamber of resonance is almost infinitely variable in the forms it may assume, and it is in these forms, as we have seen, that we must find the origin of the vowels and their *nuances* of sound. In Prince L.-L.

[1] "Lectures," ii. p. 128 (8th edition).

Bonaparte's alphabet, as given in Mr. A. J. Ellis's "Early English Pronunciation," seventy-five vowel-sounds (exclusive of *l̥* and *r̥*) are distinguished from one another, ten of which occur in no actual language, and of the remaining sixty-five, fifty occur each in less than nine European dialects. For practical purposes, however, it is necessary to analyze the formation of those vowels only which are heard most usually in spoken language, always remembering that the *nuances* of which these are capable are nearly unlimited, and that the same speaker is constantly varying what he intends and believes to be the same vowel-sound. Speaking generally, we may say that in pronouncing the vowels we invariably raise the tongue towards the palate, but not so as to touch it—as in the case of the consonants—the lips being passive in some instances, and rounded in others. It is needless to note that in phonology, as in all other departments of the science of language, the Italian pronunciation of the vowels must be adopted. Our erroneous pronunciation of the vowel-symbols is not one of the least important reasons for urging a reform of English spelling.

The three fundamental vowels, round which all the others group themselves, are *a*, *i*, and *u*; and though it is not necessary to hold that these were the first vowel-sounds articulated by man, it is necessary to regard them, for analytical purposes, as the primary elements to which the rest may be ultimately referred. According to Winteler, these three vowels must be arranged in a straight line, of which *i* forms one end and *u* the other, *a* standing in the middle.

In forming *a* the tongue is in a more constrained posi-

tion than in the case of any other vowel; it lies flat and retracted, while the lips are wide open. Helmholtz makes its inherent tone B″ flat. Owing to the constrained position of the tongue, this vowel is more liable to be modified than any other; the "neutral" *a* is scarcely ever heard, produced as it is by the gradual narrowing of the movement of the tongue from the back of the mouth, where the obscure *a* of *father* is heard, to the front of the mouth, where we get the broad *ä* of *pair*. This neutral *a* which may be heard in the Italian *ămātă* is not the "natural" sound it is sometimes called; different parts of the mouth must be modified to create it, occasioning the nasal sound we perceive in moaning if the mouth remains passive, or the shrill *ä* of the new-born child, if the nasal orifice is closed by the elevation of the soft palate.[1] The belief that language was once in a stage in which the neutral *a* was the only vowel known is contradicted by the facts of phonology.

A stronger effort of articulation is required for *i* and *u*. The lips must be slightly opened, the larynx raised, and the tongue pushed upward, so that its front approaches the hard palate, if we want to produce *i*, the natural pitch of which is said to be D⁗. The movement of the tongue from the back to the front of the mouth, with a gradual narrowing of the air passage, forms both the *i* of *mill*, and the *i* of *meal*.[2] As we shall see, the position of the

[1] Bindseil: "Abhandlungen zur allgemeinen vergleichenden Sprachlehre," p. 212 (1838), quoted by Max Müller: "Lectures," ii. p. 136.

[2] For the difference between these two sounds, see Sweet: "Handbook of Phonetics," § 14, p. 9.

tongue in forming *i* approaches that required for forming the palatals, and thus explains the relationship that exists between them. For *u* the tongue is raised towards the soft palate, the larynx lowered, and the lips rounded; hence the connection between this vowel and the labials. Its connection with the gutturals, as illustrated by the change of *werra* into *guerre*, or *vespa* into *guêpe*, is explained by the position of the tongue, which approaches the soft palate in forming *u*, and touches it in forming *k* or *g*. The rounded shape of the mouth needed by *u*, as compared with its narrow neck-like appearance needed by *i*, strengthens the deep partial tones, and dulls the sharp ones, thus occasioning the converse effect of *i*. In fact, *u* is essentially the vowel of the bass, *i* of the soprano. The inherent tone of *u* is F.

It is obvious that an almost endless series of modifications may be made in the primary vowels by slight changes in the position of the organs by which they are produced. Between *a* and *i* stands *e*; between *i* and *u*, *o*. In pronouncing *e* the tongue is less raised than in pronouncing *i*; for *o*, the back of the tongue is less raised and the lips more widely opened than for *u*. In *o*, however, as in *u*, the lips have to come into play; hence it is that these two sounds are so frequently weakened to *e* and *i*, whereas the converse change never takes place. In *e* and *i* we have a simple and not a double action. According to Helmholtz, the inherent pitch of *o* is B′ flat, of *e*, B‴ flat or F′.

But *e* and *o* may again undergo considerable change. If while pronouncing close *e* (as in the French *été* or German *see*) we round the lips, the sound is produced

which is represented by *ö* in Middle and Southern German and *eu* in French, the short sound of which may be heard in the German *böcke*. It lies, it will be observed, between *e* and *o*, and its inherent pitch is C‴ sharp. Closely related to this *ö* is the German *ü*, French *u*. This sound is produced by rounding the lips when the organs of speech are in position for pronouncing *i*, which explains the use of *ü* and *i* as rhyming equivalents in German poetry. *Ü* consequently lies between *i* and *u*, though, from another point of view, it may be described as standing furthest from *a* in a series of which *ö* forms the centre. The inherent pitch of *ü* is G‴.

Besides *o*, we have also the sound heard long in words like *bought* or *aúgust*, and short in words like *not* and *augúst*, formed by slightly depressing the tongue, widening the air-passage, and rounding the lips to a less extent than in the case of *o*.

Other vowel-sounds which may be noticed are the *e* of the French *prêtre*, German *väter*, whose natural pitch is made G″ or D‴, the closely related open *e* (*ä*) of the English *pair*, the short *a* of English closed syllables like *hat* or *happy*, the short *e* of the English *men*, and the short *i* of the English *hit*, *pill*. These short vowels are in great measure due to the little use made of the lips in articulation, and the compensatory exercise of the tongue, which characterize modern English. It is small wonder that we experience so much difficulty in pronouncing *ö* and *ü*, when even our *u* is uttered with lips scarcely at all rounded. On the other hand, whenever we find these sounds in a language, we may conclude that we have to do with a speech which gives the lips their full share

in articulation. Sievers would call those vowels *passive* in which all the organs of speech needed for their clear pronunciation are not brought into play, fully pronounced vowels being termed *active*.[1]

The same lazy pronunciation of cultivated English which has almost dispensed with the service of the lips is the cause of the increasing preponderance of the so-called neutral vowel heard in such words as *but, virtue, dove, bird, oven.* Except in affected pronunciation we may detect it in most unaccented syllables, especially if they happen to be final; thus we have *diligĕnce, muttŏn, ăgainst, finăl, evĭl, valuăblĕ.* So, too, as Professor Max Müller remarks, "*town* sinks to *Paddingtŏn, ford* to *Oxfŏrd.*" He believes it to be pronounced with non-sonant or whispered breath.[2] Mr. A. J. Ellis would make it voice in its least modified form; and Mr. Sweet regards it as a mere voice-glide. The "indistinct" vowel heard in Arabic words by travellers seems to be identical with it. Its existence in a language is a sign of age and decay; meaning has become more important than outward form, and the educated intelligence no longer demands a clear pronunciation in order to understand what is said. The participation of all the organs of speech in the creation of vowel-sounds is, on the contrary, a mark of linguistic freshness and youth. When we find both tongue and lips equally active in the formation of *u* and *i*, we may feel pretty sure that we are in the presence of an uncultivated dialect. Vowels formed by combining the position of the tongue required for *u* with that of the

[1] "Grundzüge d. Lautphysiologie," p. 46 (1876).
[2] "Lectures," ii. p. 133.

lips required for *i* are extremely rare in Aryan speech; an exceptional instance is to be met with in the Russian *jery* (*y*).

But we must never forget the infinite capability of modification possessed by a vowel. The same vowel-sound of the same word is not only apt to be pronounced differently by two natives of the same country, but even by the speaker himself at different times, particularly if his attention has been directed to his pronunciation of the sound in question. It is true that the shades of difference between the sounds may be so fine as to escape all but the specially trained ear; but this does not prove them to be any the less real. Putting aside quantity, accent, emphasis, or accidental alteration in the vocal organs, it is difficult to pronounce the same word twice over in exactly the same way, so far, at least, as its vowels are concerned. It is not wonderful, therefore, that it is in their vowels that dialects soonest and most easily alter, and that the vowel-system is the best guide in mapping out the several stages in the history of a language. Of course the character of a vowel-sound is materially affected by its position in a word, or by the consonants with which it is associated; the pronunciation of the same vowel varies in a closed or an open syllable. Long and short vowels, too, differ not only quantitatively, but qualitatively also. Every vowel has both its own peculiar pitch and a pitch dependent on the length of the vocal chords. The peculiar pitch is the result of the resonance-chamber in which the vowel is formed. The high pitch of *i* is due to the narrow air-passage in the front of the mouth in which it is produced, while the

lowered pitch of *a* and *u* is caused in the one case by the greater size of the resonance-chamber, and in the other by the narrow opening of the lips. The same pitch may be produced by different modifications of the same resonance-chamber. Thus the French *eu* in *fleur*, produced by slightly raising the front part of the tongue and rounding the lips, has the same pitch as the English *e* in *err*, produced without any rounding of the lips at all.

But we have not yet finished with the vowels. The mouth is not the only agent concerned with their production. Brücke[1] asserts that the bones of the skull itself participate in the vibration caused by the utterance of the high-pitched vowels. However this may be, the larynx, the posterior wall of the pharynx, and the *velum pendulum*, or soft palate, with the uvula attaching to it, have all to do with the creation of vowel-sounds. Czermak has proved by experiment that the *velum pendulum* changes its place with each vowel that is uttered, rising successively for the pronunciation of *a*, *e*, *o*, *u*, and *i*. The nasal orifice, too, is closed during the pronunciation of some vowels, and more or less open during that of others. *A* and *e* were the only two vowels which a young man named Leblanc, whose larynx was completely closed, was able to utter; while, on the other hand, experiment has shown that with *i*, *o*, and *u* the passage to the nose is shut, slightly open with *e*, and considerably open with *a*. From this it will be seen that the term "nasal vowel" is a misnomer. Nasal vowels, in fact, are produced by dropping the uvula, and so allowing the air to vibrate freely

[1] "Grundzüge d. Physiologie u. Systematik d. Sprachlaute," p. 16 (1856).

through the cavities which connect the nose with the pharynx. So far from a passage of the air through the nose being necessary, we may even increase the nasal twang by stopping the nostrils. The strength of the nasalization depends on the distance of the *velum pendulum*, or soft palate, from the tongue; and in languages like French, in which much use is made of nasalized vowels, the vowel is frequently followed by a true guttural nasal. It has often been noticed that French, in spite of its strong tendency to nasalize the vowels, has no nasalized *i* or *u*. The cause of this deficiency is very simple. A nasalized vowel requires a free passage for the air from the pharynx to the nose; but this is rendered almost impossible in the formation of *i*, where the tongue is raised so high as to send most of the air through the mouth however much depressed the *velum* may be, as well as in the formation of *u*, where the tongue is pushed backward towards the soft palate itself. A nasal *i*, however, occurs in Portuguese, and probably also in the Sanskrit *simha*, "lion."

Every vowel-sound, then, demands three main conditions for its production—the exspiration of air from the lungs, the vibration of the vocal chords, and the formation of a chamber of resonance by the organs of speech. The three conditions must co-exist if we are to have a simple vowel of definite quality, though the exspiration of air need not last beyond the moment at which the vowel-sound is formed. But the position of the organs of articulation both before and after its formation occasions important differences in the manner in which it is introduced or ceases to be heard. In quick and lively utte-

rance, the energy with which the stream of air is emitted makes it difficult for each exspiration to be exactly simultaneous with the corresponding vibration of the vocal chords, while if the exspiration is weak, the vocal chords are apt for a moment not to vibrate. In order to give the chords on the one side the resisting power requisite in energetic exspiration, and on the other side to make them vibrate without delay in weak exspiration, the windpipe must be contracted for a second, thus checking the outflow of breath and causing the chords to vibrate in unison. The sonant breath so produced is the *spiritus lenis* of our old school-grammars, the slight noise produced by the check given in the throat to the uprush of air from the lungs. The noise may easily be detected in whispering, or in the pronunciation of a word like *'ear*, when a special effort is made to prevent it from degenerating into *year*, and the fact that it is a noise will explain the dislike felt by the sensitive Greek to what the grammarians term a *hiatus*. The *spiritus lenis* varies according as it is the result of a compression of the *chordæ vocales* alone, or of the false *chordæ vocales* as well; but it is doubtful whether we can treat it as a distinct consonant and not rather as the pure tone of the voice. Perhaps it should most strictly be called a glide. It readily passes into the non-sonant aspirate or *spiritus asper*, by allowing the breath to pass through the throat without check or hindrance. The glottis, indeed, is in the latter case slightly narrowed and the larynx stiffened, but the difference between the rough and soft aspirates is that the one is a continuous sound, the other a checked breath. The vocal chords

are brought together while the breath is passing through the throat, and since their movement may be either quick or gradual the hard aspirate or *h* may correspondingly vary in character. As Czermak first pointed out, the more usual hard aspirate is that produced by the gradual compression of the vocal chords when they remain for a moment in a given contracted position.[1]

The same causes which produce the *spiritus lenis* or the *spiritus asper* at the beginning of the vowel-sound produce similar results at its end. It may terminate with a weak breathing, a firm breathing, or a non-sonant aspirate. In the case of a weak breathing the exspiration either ceases before the vocal chords have begun to vibrate, thus resulting in a long vowel, or at the very moment at which the windpipe is opened to admit the passage of air, the result being a short vowel. The weak breathing answers to what may be called the neutral vocalic utterance, so rarely heard in language, when the vowel-sound is introduced without either the soft or hard aspirate, the windpipe being merely narrowed sufficiently to set the vocal chords in motion at the same moment that the exspiration takes place. The firm breathing corresponds with the *spiritus lenis*, and is due to a sudden check given to the vibrating voice. Examples of it occur in words like *no! bah!* uttered abruptly, or where we wish to divide two similar vowels one from the other. The non-sonant aspirate is produced by continuing the exspiration for a while after the opening of the windpipe, and may be heard in final vowels which are at once

[1] "Wiener Sitzungsberichte," lii. 2, pp. 623 sq.

short and strongly accented. The non-sonant aspirate is sometimes combined with the firm breathing, especially in Danish, where such words as *ti*, *nei*, are pronounced with a double exspiratory effort, the second consisting of a non-sonant breath of more or less strength, jerked up, as it were, after the vowel.

Now, let us stop for a moment to remind ourselves of the distinction between sonant and non-sonant. Non-sonant or surd sounds (also called "hard" and "breathed") are breath as modified by the organs of speech ; sonants, "soft" or "voiced" sounds, are voice similarly modified, voice being breath when played upon by the vibrating *chordæ vocales* in its passage through the partially closed glottis. Voice, therefore, continues to be heard without interruption as long as we have a succession of sonants following one upon the other; the transition or "glide" from one sonant to another consisting simply in the change of position assumed by the organs of speech. In pronouncing the sound *al*, all that happens in passing from *a* to *l* is a transference of the tongue from the position required for forming *a* to the position required for forming *l*; voice continues without interruption. Now it is clear that while voice is passing from *a* to *l*, neither pure *a* nor pure *l* can be sounded, though the time occupied by its passage (that is, by the change in the position of the tongue) is so infinitesimally small that the sound or sounds actually produced cannot be heard, and all we can be conscious of is a modification of *a* at its end or of *l* at its beginning. If we have two successive vowels, each belonging to a different syllable, a separate effort ofex-spiration is needed for both, and the transition-sounds are

apt to escape notice from the weakening of the exspiration during the interval between the two efforts; but if the vowels do not belong to distinct syllables, the result is wholly different. Diphthongs, as we term them, consist in the combination of two simple vowels, usually short, into a single syllable pronounced, therefore, with a single exspiratory effort, and with the stronger accent on the first vowel. The sound we hear is produced while the organs of speech are being changed from the position required for the one vowel to the position required for the other. We have only to sing the diphthongs *ai* or *au* on a long note to hear a distinct *i* and *u* at the end of each, and the Sanskrit grammarians discovered more than two thousand years ago that the diphthongs *ê* and *ô* were really combinations of *a* + *i* and *a* + *u*. The primary condition of the existence of a diphthong is the rapid transition from one of the component vowels to the other, and this renders the true resolution of a diphthongal sound so extremely difficult except to the specially trained ear. Once acquainted with the two component vowels, we can easily determine the intermediate or transition sounds in which the diphthong really consists; but written documents rarely do acquaint us accurately with them. Diphthongs whose second element is *e* or *o* have sometimes been termed "imperfect" and considered of younger origin than those whose second element is *i* or *u*, because of their greater fulness of tone and consequent inappropriateness to the unaccented place in the compound; but such a view does not seem to be correct. It appears certain, however, that languages show a tendency to form diphthongs the longer they live and the greater the

extent to which they have been affected by phonetic decay. English is a prominent example of this tendency; our vowels are all becoming diphthongs; even the first personal pronoun *I* (*ai*) has become one, and already we hear *aither* and *naither* more frequently than *either* (*eether*) and *neither*. The so-called long vowels which occur in such words as *say*, *no*, *he*, are all diphthongal, and some of the local dialects have carried the tendency even further than the literary language.

The existence of triphthongs has been disputed, and no doubt most of the alleged cases, such as *iei* or *ieu* in the Romance idioms, are either dissyllables or consist of a semi-vowel followed by a diphthong. But, as Sievers remarks:[1] "the transition from the first to the second component element of a diphthong may be so prolonged that even the transition sounds themselves may be distinctly heard." As for semi-vowels, they differ from the first element of a diphthong only in having lost the accent and being followed by a strongly accented vowel. Hence they come to assume the function of sonant consonants. Hence, too, the necessity that the vowels in which they originate should possess less fulness of tone than the vowels by which they are immediately followed. We may have *yá* and *wá*, but hardly $^{a}_{i}$ and $^{a}_{u}$. Naturally *i* and *u* most readily pass into semi-vowels, partly from their comparatively weak tone, partly from the compression of the air-passage needed to produce them, partly from the similar position of the organs of speech in forming the spirants *y* and *w*. These spirants,

[1] "Grundzüge der Lautphysiologie," p. 88 (1876).

as we shall see, are not to be confounded with the semi-vowels *y* and *w*.

A vowel, then, is the quality or timbre of voice as modified by the tongue and lips, and consists of the forms assumed by the vibrating air as it passes through the windpipe and vocal chords. But the tongue and lips naturally tend towards the same position whatever be the vowel sounded. A man who has been accustomed to give his tongue a particular position in pronouncing *i* will give it much the same position in pronouncing *e*, for we must never forget that there is an almost infinite number of *i*'s or *e*'s varying with the slight changes of position of the tongue and lips when placed for enunciating those vowels. According to the greater or less use made of the lips in speaking will be the character of all the vowel-sounds of a language. The vowels, consequently, fall into systems, and in investigating the phonology of a dialect, we have to inquire not only what vowels it possesses, but more particularly what system these fall into. The basis of English vowel pronunciation is the passive position of the lips, just as in the Holstein dialect it is the withdrawal and flattening of the tongue. Sievers states, that in speaking the dialect of Lower Hesse the tongue must be relaxed and in a position of the slightest possible tension; while, on the contrary, in the Saxon dialects the whole tongue must be tense, the throat stiffened and the exspiration energetic. "Hence the hard, somewhat screaming impression made by this dialect in contrast with the dull, almost heavy and negative character of the Hessian."[1]

[1] Sievers, *loc. cit.* p. 50.

But it is time to turn from the vowels to the consonants, the skeleton, as it were, of articulate utterance. A language could consist wholly of vowels; indeed, a Polynesian dictionary contains numbers of words which have not a single consonant in them, and children frequently mark the differences between words rather by the vowels than by the consonants they contain. The earliest systems of writing other than ideographic are syllabaries and not alphabets, while alphabets like the Sanskrit ascribe an "inherent" vowel to each of their consonants. But though vowels are indispensable to an organized language, it by no means follows that they were equally indispensable to the first attempts at speech. As a matter of fact, a preponderance of vowels such as characterizes the Polynesian dialects is a sign of phonetic decay and linguistic old age. "Consonants," says Professor Max Müller, "are much more apt to be dropped than to sprout up between two vowels." If we had only the Greek *μέμερος* or the Latin *memor* before us, we should have no idea that they have lost an initial sibilant; in fact, this only becomes apparent when we compare the Sanskrit *smar*, "to remember." The endeavour sometimes made to reduce the Parent-Aryan alphabet to a small number of simple and easily pronounced consonants, is founded on the fallacy that the results of a phonetic analysis of the words we utter and a reduction of the sounds they contain into their leading types, is identical with the primitive alphabet of the Aryan race. On the contrary, the sounds of a language become more simplified and clearly marked the longer it continues to be spoken, and the primitive Aryan alphabet, instead of

being a simple list of primary sounds, from which all that are harsh or indistinct have been carefully eliminated, must really have resembled the existing alphabets of barbarous or semi-barbarous tribes, and included a large variety of consonants, many of which we should find it extremely difficult to reproduce.

Consonants may be divided, in the first place, into hard and soft, or, as they are more usually termed, surd and sonant. A surd consonant consists of checked breath, a sonant consonant of checked voice. If, in the second place, either breath or voice is completely checked in its passage through the organs of speech, an explosive or momentary (also called a stopped or mute) consonant is heard at the moment the check is removed; if the check is not complete, and the organs of speech only approximate so that the breath cannot escape without friction, a fricative (spirant, "unstopped") or continuous consonant is the result. Where a spirant or fricative is immediately preceded by an explosive, a double sound or affricative is the result (*e. g.* German *pf*, Armenian *ts*); where the spirant follows the explosive we have the aspirated letters, which will be spoken of hereafter. Among the continuous consonants must be ranked the nasals, produced by dropping the uvula and so allowing some of the breath to make its way to the nostrils through the pharynx, and the trills produced by the vibration of the uvula, the lips, or more commonly the tongue. Distinct from the nasals and the trills are the central continuous consonants (*h*, *ch*, *y*, English *r*, *w*, *wh*, and the sibilants) formed by lifting the centre and point of the tongue to the centre and front of the palate, and the

lateral continuous consonants (*l*, and, according to Bell, English *th*, *f*, *v*), in forming which the breath is allowed to escape along the edges of the tongue. A further cross division will be into liquids, gutturals, dentals, palatals, labio-dentals, and labials, to which may be added the linguals or cacuminals (cerebrals) of Sanskrit.

*The Liquids.*—Among the liquids should properly be reckoned only those kinds of *r* and *l* which stand to the spirant *r* and *l* in the same relation that the vowel *i* stands to the spirant *y*. In forming the vowels, as we have seen, the tongue assumes a dorsal position, that is, some part of its back is raised towards the palate; in forming the liquids, on the other hand, the tongue has either an oral (central) or a lateral position, the liquid *r* requiring the articulation of the centre and tip, the liquid *l* that of the sides. But there are several kinds of *r*, which may be classed as cacuminal, spirant, alveolar or dental, uvular or guttural, and laryngeal. The cacuminal *r* is the purest liquid *r* that we hear, inasmuch as it is wholly untrilled, and is especially common in cultivated English. In order to produce it, the front surface of the tongue is hollowed out into a spoon-like shape and raised towards the hard palate behind the alveolar teeth-roots of the upper jaw, while the edge of the tongue is stiffened and kept free from any sort of vibration. It will be clear from this how closely allied this cacuminal *r* is to the vowels, and we can easily understand the readiness with which it combines with a vowel-sound when we remember that it may be formed in almost any part of the hard palate, while the lips have free play during its creation. Corresponding to the cacuminal *r* is

the spirant (or "buzzed") *r*, which also occurs plentifully in English as in such words as *try* or *dry*. The mouth is completely closed by the tongue when sounding *t* or *d*, and if in passing to the position needed for *r* the tongue is not removed from the palate quickly enough, or the exspiration is not sufficiently strong, a slight fricative sound like that of *sh* is produced which results in the spirant *r*. As for the dental or alveolar *r*, all that is requisite to produce it is to raise the front part of the tongue, at the same time slightly arching its extreme edges, and so obtaining a constricted or "squeezed" chamber of resonance between the side of the tongue and the alveolars. This *r* may be untrilled, but in German it is more frequently a trilled one. The trill is caused by the force of the exspiration which strikes the thin hollowed edge of the tongue in an outward direction, the tongue the moment after returning to its former position like a piece of india-rubber. If the two edges of the front part of the tongue be pressed against the teeth, the tip of the tongue between them being alone allowed free play, and accordingly vibrating in a very small and narrow space, a sound is heard approaching that of *s* or *sh*. The stronger the uprush of breath and the vibration it occasions, the plainer will be the sibilated sound; indeed, a genuine sibilant can even attach itself to the liquid, as in the Polish *rz*. The uvular or guttural *r* is supposed by Sievers to be a modern substitution for the trilled alveolar *r*. At any rate it is produced by lifting the back of the tongue to the soft palate and forming a deep groove along the middle of it, in which the uvula can vibrate freely. The groove, however, is frequently left wholly or

nearly unformed, the consequence being a very grating character acquired by the *r*, which then passes over into the sonant guttural spirant heard in sounding the modern Greek γ. The laryngeal *r* was first observed and described by Brücke, who makes it arise from sinking the voice so that the vocal chords cease to vibrate audibly, and merely produce intermittent and explosive sounds.

Each kind of *l* is formed in the same way, by raising the tip of the tongue and so closing the orifice of the mouth, at the same time allowing the breath to pass along the two sides of the tongue in successive oscillations produced by the vibrations of the elastic edges of the tongue. We may distinguish the cacuminal *l* in which the tip of the tongue is bent backwards as in the cacuminal *r*; the alveolar *l* with the edge of the tongue laid against the alveolars; the dental or interdental *l* in which the flattened surface of the tongue fills up the space between the two sides of the mouth; and the dorsal *l* (as in the Spanish *llano*) in which the tip of the tongue presses against the lower incisors, while the centre of the tongue is raised towards the alveolars of the upper teeth. The best-known variety of the cacuminal *l* is that of the Welsh *ll* formed by pressing the flattened tip of the tongue against the gums of the upper teeth and allowing the breath to escape on its right side. The same sound is heard in the Icelandic *hl* and *l* before a *t*, and also in Cheroki,[1] though in Icelandic the tongue

[1] Haldeman in the "Proceedings of the American Oriental Society," 1874, p. xlv. According to Professor Rhys the Welsh *ll* has resulted from the meeting of two *l*'s, each sounded independently up to the ninth century. Like the Welsh pronunciation of *dd*, the pronunciation of *ll* may have been originally borrowed from English.

is pressed against both sides of the mouth. A half-sonant, spirant *l* may be heard when the exspiration is strong; a surd *l* often occurs at the end of a word or after surd consonants (particularly *t* and *s*). The sound of the *l* may be made clearer or obscurer by raising or depressing the front part of the tongue, and so narrowing or enlarging the space between its edges and the teeth, and since the vowels may be pronounced with the tip of the tongue on the palate, they may readily pass into *l* by simply broadening the surface of the tongue.

We have already seen that the tongue is not the only organ of speech which may be "trilled." In the Arabic *grhain* (غ), the Northumberland *burr* and the French Provençal *r*, *grasseyé*, the uvula which lies along the back of the tongue towards the teeth is very distinctly made to vibrate. "If," Mr. A. J. Ellis says, "the tongue is more raised and the vibration indistinct or very slight, the result is the English *r* in *more*, *poor*, while a still greater elevation of the tongue produces the *r* heard after palatal vowels, as *hear*, *mere*, *fire*. These trills are so vocal that they form distinct syllables, as *surf*, *serf*, *fur*, *fir*, *virtue*, *honour*, and are with difficulty separable from the vowels." The lips, too, may be trilled, the result being *brh*, a sound constantly heard from children.

*The Nasals.*—The characteristic of a nasal is, as the name declares, the participation of the nose in producing the sound. The breath passes through the nose rather than through the mouth. Sometimes, however, all that happens is the removal of the membrane which separates the nasal orifice from the pharynx; this alone is indispensable to the formation of a nasal letter. Hence its

resemblance to a vowel, the buccal tube being alike silent in both cases. If we try to converse when walking uphill we shall find that the nasals are longest heard. These nasals must be classified as labial, dental, palatal, and guttural, according to the part of the speaking apparatus in which the current of air is checked in its exit, and it will be best to treat them along with the other sounds formed in the same part. It should be noted, however, that the so-called surd nasal which we hear in *hm!* has really, as Sievers remarks, not the slightest similarity to a nasal, but approximates to the aspirates or breathings.

The traditional division of the consonants into labial, dental, palatal, cerebral (cacuminal) and guttural, though not scientifically precise, is yet too familiar to be disregarded, and we shall therefore follow it so far as is possible. We must, however, remember at starting the primary distinction between the two classes of letters, called variously hard and soft, tenues and mediæ, surds and sonants, as well as between those called momentary (explosive) and continuous or checks and fricatives. What this distinction consists in has already been explained.

*The Labials.*—The labials may be subdivided into pure labials, with the formation of which the lips only have to do, and the labio-dentals, in the formation of which the teeth also participate. In pronouncing the surd *p*, the sonant *b*, the nasalized *m*, or the middle German *w*, the lips are either wholly or (as in *wh*) almost wholly closed. *B* only differs from *p* in being pronounced with voice instead of breath, the voice partly preceding, partly following the check occasioned by the closure of the lips.

As in all sonant letters, the exspiration is less forcible than in the case of surd letters. The labio-dentals *f* and *v* are merely modifications of the rough and soft aspirates by pressing the lower lip against the upper teeth. When the lips are brought together without any interference of the teeth the *spiritus lenis* becomes the German *w* as heard in a word like *Quelle*. Our *wh*, or rather *hw*, and *w* are continuous sounds, the lips being slightly opened, the back of the tongue raised, and the breath passing over its central part.

*The Dentals.*—The articulation needed for the dentals is partly oral, partly alveolar, partly dorsal. The common principle, however, involved in the formation of them all is the same; the tongue must be brought against the teeth. The so-called cerebral or cacuminal dentals of Sanskrit and the Dravidian tongues (*t*, *d*, *ṭh*, *ḍh*) are due to oral articulation, the tongue being made convex and the lower surface raised towards the palate. The English *t* and *d* are also said to be cerebral, though the tip of the tongue is not bent very sharply backwards in forming them. Alveolar articulation is needed for the dentals when they have to be pronounced with the edge of the flattened tongue pressed against the alveolars of the upper teeth, while in dorsal articulation the point of the tongue is simply turned back against the lower teeth, its convex being at the same time lifted to the palate. It is in this way that the Bohemian dorsal *t* is formed. The dorsal dentals may be varied by raising the back of the tongue nearer to the mouth or the throat, the tip either resting behind the lower teeth or being raised to the upper alveolars. Besides the surd dental *t* and sonant dental *d*, we

have also a series of dental spirants which bear the same relation to *t* and *d* that *f* and *v* bear to *p* and *b*. By slightly opening the teeth and stopping the aperture with the extended edges of the tongue we produce the interdental sounds heard in *breath* or *think* and *breathe* or *then*. The first *th* (or *thorn* þ) differs from the second (ð)[1] in being pronounced with the rough breathing instead of the soft breathing. They stand midway between an oral and a dorsal articulation. How readily they may pass into the labio-dentals *f* and *v* is clear at a glance ; we have only to raise the lower lip a little and curl back the tongue, and our *th* becomes an *f*. Equally readily, as we shall see, is the passage from them to a sibilant. We seldom meet with an interdental consonant ; Sievers, however, states that they exist in Servian and Armenian, where they regularly represent the whole class of dentals.

*The Palatals.*—The palatals come next. They stand between the dentals and gutturals, and are formed by throwing the middle of the tongue, raised as it were into a hump, against that part of the roof of the mouth where the hard palate begins. The sound (*ch*) heard in the English *church* or the Italian *cielo* is now held to be, not a palatal, but a dental (*t* followed by *sh*), and we must go to the Sanskrit (*ch*) as still pronounced to find a type of the whole palatal series. It "is formed most easily," says Professor Max Müller, "if we place the tongue and

[1] Mr. Sweet has proved that the pronunciation of these two Anglo-Saxon letters was originally the same, but it would be convenient to use them to distinguish the different sounds of the modern English *th*.

teeth in the position for the formation of *sh* in *sharp*, and then stop the breath by complete contact between the tongue and the back of the teeth." It will be seen from this that the true *ch* is not a double letter, a compound of *t* and *sh* or *s*, but a single consonant which ought to be denoted by a single character. The Sanskrit palatal *ch* may have had the same pronunciation as the Armenian *tʿ sh*,[1] as Sievers thinks, or it may have been equivalent to *ky*. However this may be, it is plain from the great extent of the "chamber of resonance" in which the palatals are formed—the whole of the hard palate being available for the purpose—that a large number of palatal sounds is possible. They may range, in fact, from *ky* to *tsh*. The guttural *k* passes easily enough into the palatalized *ky*, as may be seen from the pronunciation of *kind* and *cow* as *kyind* and *kyow*, not unfrequently heard in English; indeed, all that is requisite for the transition is for the front part of the tongue to assume the position needed for *y*, while the back part is in that needed for *k*. In the northern dialects of Jutland *j* is heard after *k* and *g* when followed by *æ*, *e*, *o*, and *ö*. The German "soft" guttural aspirate or palatal spirant in words like *ich*, *licht*, is the result of the *spiritus asper* passing the middle of the tongue when raised against the hard palate, *y* in *you* or *yet* being due to a softening of the breath, the organs of speech remaining unchanged. The palatal sibilants will have to be considered separately.

*The Gutturals.*—Putting aside the cerebrals, which have been treated under the head of the dentals, we now

[1] Hübschmann: "Z. d. D. M. G." xxx. pp. 53, 57.

come to the gutturals, usually an important class of sounds in savage idioms. First of all we have the tenuis *k*, produced by bringing the root of the tongue against the soft palate, together with the deeper *k* heard in the Semitic *koph* or Georgian *q*. Next is the media *g*, to create which breath has to be changed into voice. Then will come the guttural nasal *ng* (as in *sing*), and the continuous *ch* and *g* heard in the German *nach* and *Tage*. The sound heard in *nach* or the Scotch *loch* is formed by raising the tongue against the soft palate or uvula, and so checking the uprush of breath, its sonant representative being the *g* of *Tage*. The result of only slightly checking the uprush of breath in the latter case is the passage of the guttural into a semi-vowel. This sonant *g* is the γ of modern Greek; it sometimes takes the place of the uvular *r*, though this office more properly belongs to the sonant *g* of Armenian pronounced further back in the mouth. The surd *ch* may be similarly modified by a posterior pronunciation, and so become the Armenian *xe*, the Russian *x*, the Polish *ch*, and the deep *ch* of the Swiss.

*The Sibilants.*—The main division of sibilated sounds is into the surd *s* and *sh*, and the sonant *z* and *j*. When the centre and tip of the tongue are raised to the centre and front of the palate, the breath or *spiritus asper* is modified into *s* (as in *sin*), the voice or *spiritus lenis* into *z* (as in *zeal* or *rise*). When the tongue is turned back with its lower surface against the alveolars of the upper teeth, less of the palate being covered than is required for *s* and *z*, breath becomes *sh* (as in *sharp*), voice *j* (as in *azure*, *pleasure*, French *jamais*). The ordinary German *s* is a dorsal one, the current of air being allowed to pass be-

tween the upper alveolars and the lower surface of the uplifted tongue; in North German dialects, however, we frequently meet with an alveolar *s*, formed in much the same way as the alveolar *r*. The same *s* also occurs in English, as well as a cacuminal *s* distinguished by a more pronounced retraction of the tip of the tongue and narrower space between it and the palate. The palatal *'s*, found in Russian, for instance, before the weak vowels (*e*, *i*, &c.), only differs from the dorsal *s* in the more retracted position of the tongue. *Sh* (*j*) can be modified in three ways. The channel formed in the tongue when pronouncing *s* may be so diminished as to allow the breath to strike against the lips, or the lips may form with it an approximately rectangular aperture, or, thirdly, the left (or more rarely the right) side of the tongue may be pressed against the palate, causing the breath to strike against the lips, which are generally raised a little on the side. Sievers declares that he has sometimes heard this unilateral *sh* in England. However this may be, all three modifications of *sh* may combine with the dorsal, alveolar, cacuminal, and palatal positions of the tongue to produce the cacuminal *sh* of English (identical, probably, with the Sanskrit *'s*), the palatal *mouillé 's* and *ć* of Polish and Russian, the alveolar *sh* of the North German dialects, and the dorsal *sh* of the Middle and Southern German dialects. It is one of the many evils of our defective and misleading mode of spelling that the surd *sh*, though a single sound, is represented by two letters, and so cannot be distinguished from the aspirated *sh* (as in *gas-hole*), which is really a double sound.

These aspirated sounds consist, as we have seen, of an

explosive followed by a spirant, and they occupied an important place in the older languages of our Aryan family of speech. A large number of roots contain them, and the Brahmans still pronounce each part of the compound sound distinctly, *ph* and *th*, for instance, being pronounced as in our *up-hill* and *ant-hill*. The compound nature of the sound caused sometimes the one element in it, sometimes the other, to fall away. Thus, to a Sanskrit *tubhy(am)* corresponds a Latin *tibi*, and the Latin *mihi* and Sanskrit *mahyam* presuppose an earlier *mabhyam*, *mabhi*. The Athenian tendency to false aspiration which has produced the initial aspirate of ὑδώρ (Latin *unda*, *udus*) or ἵππος (Latin *equus*) has also occasionally affected the labial tenuis. φῦσα and its kindred, for instance, answer to the Latin *pustula*, the Lithuanian *pústi*, "to blow;" ἄφνος is the Sanskrit *apnas*, the Latin *ops*, and κεφαλή is the Sanskrit *kapâla*, the Latin *caput*. A curious metathesis of the aspiration may take place in both Sanskrit and Greek. In Sanskrit a final aspirated media before a following tenuis loses its aspirate, which is transferred to the initial of the root, provided that be *g*, *d*, or *b* (as *bhut-karoti*, "he who knows acts," for *budh-karoti*); and in Greek we find θρίξ becoming τριχός, τρέχω becoming θρέξω.

But it must be remembered that it is only the surd explosives (or tenues) that properly can thus be combined with the rough breathing (*h*). A difficulty occurs in the case of the sonant explosives (or mediæ); and it is a grave question whether we ought to transcribe *gha*, *dha*, and *bha* by the side of *kha*, *tha*, and *pha*. In Greek, at any rate, we have only aspirated tenues, and while τ' followed by an aspirate is written θ, this is never the case

with *ð*. At the same time, the existence of aspirated mediæ was recognized by the Prâtiśakhyas by the side of the aspirated tenues, and the accuracy of the Prâtiśakhyas is confirmed by the requirements of etymology.

Closely connected with the sibilants are the palatal and guttural sounds, already noticed, heard in the German *ich*, *tage*, and *acht*. The palatal *ch*, written *χ* by Sievers, *jh* by Sweet, is of two kinds. What Sievers calls *χ*,[1] heard in the German *ich*, Icelandic *hjarta*, and sometimes in such words as our *hue*, is formed on the hard palate near the soft palate by the front part of the tongue. On the other hand, *χ*,[2] as in the Dutch *g* before *e* and *i*, is formed in the hollow of the arch. The guttural sonant heard in the North German *tage*, or the modern Greek *γ*, is formed between the back of the tongue and the middle of the soft palate, the tongue being lifted up towards the front of the mouth. As already remarked, it sometimes represents the uvular *r*; thus, Mr. Sweet says, "when the passage (of the voice) is widened so as to remove all buzzing, the sound of (*gh*)[1] no longer suggests (*kh*)[2] or (*g*), but rather a weak (*r*) sound." Further back in the mouth is formed the Armenian sonant *g*, corresponding to *χ*.[2] The *ch* of *acht*, again, may be divided into two varieties. *Ch*,[1] formed, as stated above, between the back of the tongue and the middle of the soft palate, is the guttural spirant usual in German after *a*, *o*, and *u*, and heard in Scotch *loch*. Further back is formed *ch*,[2] common in Swiss and other South German dialects. We have also *ch*,[2] noted by Mr. Sweet in Scotch after *e* and *i*,

[1] That is, the guttural sonant in question.
[2] As in *nach*.

formed between the back of the tongue and the place where the hard palate begins. It thus comes very near χ.[1]

Distinct from the exspiratory sounds, whether vowels or consonants, which have now been passed in review, are sounds formed either by inspiration or simply by the air in the mouth itself. Winteler[2] describes certain Swiss dialects which make use of inspiratory sounds to disguise the voice, and the clicks characteristic of the South African languages are examples of sounds produced without either taking in or emitting breath. The Kafirs have borrowed the three easiest clicks (the dental, the cerebral, and the lateral) from their Hottentot neighbours,[3] and there are reasons for thinking that the Hottentots themselves borrowed in turn from the more primitive Bushmen. At all events, the labial and compound dental clicks are wanting in Hottentot, and the Bushman fables put what Dr. Bleek calls "a most unpro-

[1] This is the guttural sonant in question.

[2] "Die Kerenzer Mundart," p. 5.

[3] Bleek: "Comparative Grammar of South African Languages," pp. 12-15. The lateral click is sounded by the Kafirs, as by Europeans, by placing the tongue against the side-teeth, and then withdrawing it, whereas the Nama Hottentots produce it as far back as possible, covering the whole of the palate with the tongue. The palatal click of the Hottentots, which is very difficult to imitate, seems to be found in one or two Kafir words. The clicks, it must be noted, only occur in the Kafir dialects adjoining the Hottentots, and the Kafir clicks "are only found in the place of other consonants, and are used like consonants at the beginning of syllables, whilst in Hottentot a guttural explosive consonant (*k*, *kh*, or *g*), the faucal spirant *h* and the nasal *n*, can be immediately preceded by a click, and form together with it the initial element of the syllables."

nounceable click," which does not occur otherwise in any of the dialects, into the mouth of the hare, the anteater, and the moon.[1] These inarticulate clicks, thus adapted to the purposes of articulate speech, bridge over the gulf between the latter and the cries of animals, and we may see in them a survival of those primæval utterances out of which language was born. Traces of what may thus be termed the germs of language on its phonetic side are met with here and there all over the globe. Thus Haldeman describes at least three clicks heard in Texan, Chinook, and other North American languages, *t* in the Anadahhas of Texas, for instance, being followed by "an effect as loud as spitting."[2] According to Klaproth, clicks occur in Circassian; and Bleek states that two clicks are distinguished in the likhe language of Guatemala—one somewhat resembling the Hottentot dental click, and the other the Hottentot palatal combined with some guttural. Mr. Whitmee has heard a click in certain dialects spoken by the Negritos of Melanesia. Clicks are also known among the Gallas; and Miss Lloyd has found a little boy from Lake Ngami using clicks resembling those of Nama Hottentot. Clicks are formed by placing the tongue or lips in the position required by an explosive, and then sucking out the air between the organs thus brought into play, the result being the

[1] See above, p. 243. The compound dental click is produced, according to Wuras, by pressing the air through the upper and lower teeth, which stand slightly apart. Dr. Bleek says that "the Bushman word for 'to sleep' seems to be *lphkoĩnyé*, beginning with a combination of dental click, aspirated labial and guttural tenuis in which three letters are sounded together."

[2] Ellis: "Early Engl. Pron." p. 1349.

"cluck" or "smack" with which grooms are accustomed to encourage a horse, but in combination with the explosive for which the organs of speech were set. According to Mr. Sweet, the labial click is an ordinary kiss; the dental click, "the interjection of impatience ordinarily written 'tut.'"[1] In Káfir the clicks are not pure, as in Bushman—that is to say, they are always accompanied by an exspiratory consonant, which is formed at the same moment as the click. This affords an additional reason for thinking that the Káfir clicks are not survivals from the original condition of speech, but loans from another people, which have been attached by way of ornament to the existing exspiratory sounds of the language. Of the same nature as the clicks are the implosives peculiar to Saxon German, where no distinction is made between *d* and *t*, or *b* and *p*. Similar sounds are heard in Georgian and the Armenian of Tiflis, and they must have characterized ancient Accadian, since no distinction is made in writing between final *d* and *t*, *g* and *k*, or *b* and *p*. These implosives are due to compression of the air between the closed glottis and the organs of speech when in position for an explosive, by forcing the glottis upwards. No sound is emitted until the sound is fully formed, when the final or transition sound is curiously modified.

We have hitherto dealt with the individual sounds in the same fashion as the lexicographer deals with individual words. But just as a word is really but one of the elements of a sentence, and to be thoroughly understood must be treated as such, individual sounds are but the

[1] Professor Mahaffy notices that "old women among us express pity by a regular palatal click."

elements of which syllables are composed. Whatever may be the nature of a sound when regarded apart and by itself, it is necessarily much modified when combined in actual speech with other sounds. The syllable, and not the single sound, is the starting-point of phonetic utterance.

A syllable must contain either a vowel or a semi-vowel, by which are meant such inspiratory utterances as that heard in the interjection *'m*, or the vocalic *r* and *l* of Slavonic and other tongues. One of the first achievements of the phonograph has been to show that an open syllable like *ga* can be pronounced either backwards or forwards indifferently when once the organs of speech are in position; and not only so, but that when the waves of air set in motion by the pronunciation of a word are reversed, the word will be reproduced backwards—*əsoshié-shun* (*association*), for instance, becoming *nushéshiosə*.

Mr. Sweet has pointed out that syllables are divided by the stress. Speech has to be carried on by a succession of exspirations or puffs of breath, and naturally the force with which the breath is emitted gradually diminishes during the continuance of the exspiration. Only in special cases—the interjections, for example—the force increases instead of diminishing. When the exspiration is spent, and a new breath is taken, a new syllable begins. Wherever, therefore, the stress is laid we must place the beginning of a new syllable. In "a name" the stress is on the nasal, where accordingly the syllable begins; in "an aim" it is, on the contrary, on the diphthong.

The passage from one sound to another, as has already been noticed, consists of a series of infinitesimal inter-

mediate sounds, corresponding with the series of positions assumed by the vocal organs in passing from one position to another. These intermediate sounds have been conveniently termed "glides" by Mr. Ellis, and they play an important part in the formation of syllables. Glides are of two kinds, as the organs of speech may either be moved from one position to another in the shortest possible time, or be shifted, on the way, towards another position needed for the production of a third sound. Thus, in the syllable *ki* we have the immediate glide required for the transition from *k* to *i*; in the syllable *qui*, the indirect glide from *k* to *i* through the position needed for *u*. A glide may, of course, be described as either initial or final; in *ki*, the glide of *k* being final, that of *i* initial. Some of the so-called consonants and vowels are really glides. The neutral vowel (*ə*) is termed the "voice-glide" by Mr. Sweet, as "produced by emitting voice during the passage to or from a consonant." It may begin a word, as in "against," and in English is very frequently replaced by a liquid, as in the words "little," "possible." It is also found plentifully in the Semitic languages, the Hebrew *sh'wa*, for instance, being simply the neutral vowel or voice-glide. In words like "follow," when pronounced rapidly, we may hear it labialized. A diphthong, again, is a combination of a full vowel with a glide-vowel either before or after it, though the glide-vowels may be prolonged into full vowels without destroying the diphthong, by equalizing the stress upon the two elements of which it is made up. These glide-vowels (like the consonantal glides) are produced by putting the vocal organs into position for pro-

nouncing a particular vowel, but not letting voice sound until this position is being shifted to that required by the full vowel which forms the second part of the compound, and reversing the process when the full vowel forms the first part. Consonantal glides (*y*, *w*, *r*, *l*, *m*, *n*) are illustrated by the sound of *y* in *you*, and of *r* in *here*, and in a common South-country pronunciation of words like *red*.[1] According to Mr. Sweet, the aspirate *h* is a consonant in the glottis, but "a voiceless glide-vowel in the mouth."[2]

At all events it is often difficult to distinguish the rough breathing from the glide which easily developes into it by the help of a little additional stress. This glide may be detected after mediæ, tenues, and *s*, whether initial or final, as in our *cold* (when pronounced emphatically), *pack*, and *big*. The Irish and Danish aspirated consonants are formed by laying a separate stress on the glide apart from the stress laid upon the preceding consonant. The aspirated letters of Greek and Sanskrit, described above, are of course different, as here we have a combination of two independent sounds, though the latter of these (*h*) is in Mr. Sweet's eyes a mere glide-vowel in the mouth.

[1] Sievers holds that our *th* (as in *the*) is sometimes "reduced" to a glide ("Grundzüge," p. 91).

[2] "The Japanese *r*," says Mr. Sweet, "seems to be formed by first bringing the tip of the tongue against the gums without any emission of breath, and then passing on to an untrilled *r*, allowing voiced breath to pass at the moment of removing the tongue." The sound has been mistaken for *r*, *l*, or even *d*, and as it is substituted for all foreign *l*'s and *r*'s, the Japanese tendency to change *l* into *r* has been contrasted with the Chinese tendency to change *r* into *l*. It is possible that the Old Egyptian possessed the same curious sound.

Glides may be absent where two consonants formed in the same part of the vocal organs are united together (e.g. *and*, *its*), or even where they are formed in different parts. This is especially the case with English. Wherever homorganic sounds are produced, the vocal organs pass at once from the position required for the first to that required for the second, without first falling back into the "position of indifference." Where an explosive is followed by a nasal, a sudden opening of the *velum pendulum* is substituted for the usual "explosion," as first pointed out by Kudelka.

Syllables may differ one from the other in respect of *pitch* or *tone*, of *stress*, and of *quantity*. Pitch or tone is but little noticed by Englishmen, since with us it serves merely a logical or emotional purpose, such as the expression of surprise or the asking of a question, but in some languages, Chinese or Swedish or Lithuanian, for example, every word has its own separate tone, which helps to distinguish it from other words. This, too, was the case in Vedic Sanskrit, and in ancient Greek and Latin, what we call the Greek accents being really the marks of the pitch at which words were pronounced. Pitch or tone depends on the rapidity of the vibrations of sound, and may be either rising, level, or falling. The rising tone is that indicated by the acute accent. Tone may also be compound, marked in Greek by the circumflex. The compound or circumflex is heard when the tone of a vowel is again raised after it has already passed the moment of its greatest intensity, and it may therefore be described as composed of the acute and the grave, or of the rising and the falling. It may be noticed in

Lithuanian as well as in several German dialects, such as the Thuringian, which have a singing character, and when it falls upon a diphthong the second element of the diphthong is distinctly raised in pitch. Naturally it is usually found with diphthongs and long vowels, but short vowels combined with a liquid may also carry the circumflex. In Greek it commonly implies a contraction, the circumflex resulting from the coalescence of a vowel which has the acute accent with one which has the grave.[1]

The Vedic system of accentuation best exhibits the fundamental character of accent of pitch. The *udâtta* or acute denotes the highest pitch reached by the voice in a group of syllables or words. In the syllable immediately preceding the voice naturally sinks to its lowest, thus producing the *anudâtta*, or grave tone. After the *udâtta*, however, the voice falls gradually; consequently the syllable which follows has the *swarita* or circumflex accent, and it is only the next syllable to that which is again *anudâtta*.

But the tone is regulated by three different conditions, which sometimes act antagonistically. It may be either a syllable-tone, determined by the relative force with which the syllables of a word can be uttered, dependent

[1] The compound tone in Swedish, according to Mr. Sweet, "only occurs in words of more than one syllable," and "consists of a falling tone on the first (the accented syllable), followed by a high tone on the next. The high tone seems to be reached by a jump rather than by a glide. The compound is, therefore, a compound rise distributed over two syllables." The other Swedish accent, the simple tone, is the negative of the compound one, and answers to the "glottal catch" or *stöd tone* of Danish.

on the nature of the sounds of which they are composed; or a word-tone, determined in great measure by the meaning, and serving to distinguish words from one another; or a sentence-tone, mostly determined by logic or the feelings. The Greek accents, like the Vedic ones, were used to denote all three varieties of tone; while the acute and the circumflex sometimes represent the syllable-accent (as in θῖνα, ἔτυπον), sometimes the word-accent (as in νυμφή, νύμφα, ποδῶν), the grave, as Sievers remarks, "is a concession to the requirements of the sentence-tone." Similarly in Vedic Sanskrit, the *udâtta* which ordinarily indicates the word-accent, falling as it does upon the syllable (commonly the flection) to which the signification caused the attention to be chiefly directed, seems also to have indicated the sentence-tone, since the verb of the principal clause has no accent whatever attached to it. Previously, however, both in Greek and Sanskrit the accents denoted the word-tone, and the remarkable agreement between the accentuation of the two languages enables us to restore in great measure the accentuation of the undivided parent-speech. It cannot be an accident, for instance, which makes the numeral seven (*saptán*, ἑπτά) oxyton in both languages, and the numeral five (*pánchan*, πέντε) paroxyton, or places the acute accent on the last syllable of adjectives in *-us*; the accentuation in each instance must have been that of the Parent-Aryan. Where the accentuation of the two languages differs, it can generally be explained by the disturbing influence of analogy. Thus while there is so remarkable an agreement between the accentuation of Vedic and Greek nouns, there is next to none between that of the verbs. But an

explanation of this is forthcoming. The verb of the principal clause in the Veda loses its accent, as has just been remarked, unless it stand at the beginning of the sentence; in fact, it is regarded as an enclitic, and throws its tone back upon the preceding word however many syllables it may contain. Now in Greek a rule gradually grew up forbidding the accent to be placed further back than the antepenultimate; the accent, accordingly, which in the case of verbal forms of more than two syllables would have been on the last syllable of the preceding word in the Veda fell on the antepenultima of the corresponding verbal form itself in Greek. The accentuation which thus fixed itself in the verb of the principal clause was extended by analogy to the verb of the subordinate clause, and eventually to verbal forms of less than three syllables; φημί, εἰμί, and ἐστί, however, remained unaccented to bear witness to the process whereby the Greek language had changed the original accentuation of the Aryan verb.[1] This, like the accentuation of the noun, was mostly (and probably at the outset altogether) on the flection-suffix to which it called attention, and thus marked out the symbols that expressed the grammatical relations of the sentence. In the Semitic languages, on the contrary, the primitive accentuation was on the penultima, though there may possibly have been an earlier time when it was upon the ultima.[2] The tendency to throw back the accent set in early in Aryan speech; in Latin, as in the Æolic dialect of Greece, it was uniformly

[1] See Wackernagel in Kuhn's "Zeitschrift," 23 (1877).

[2] See Sayce in "Journal of Royal Asiatic Society," x. 2 (1878), pp. 251, 252.

as near the beginning of a word as possible, and the preservation of the original pitch-accent in Lithuanian is one of the most curious marks of archaism in that most conservative of West-Aryan tongues.

In Aryan the word-tone, we have seen, was primarily used in the service of grammar. In Chinese, Siamese, and other Taic languages, however, its use is lexical rather than grammatical; here it serves to distinguish the senses of words which would otherwise be pronounced in the same way. Dr. Edkins has shown that modern Mandarin Chinese is an exceedingly decayed speech; its initial consonants have been worn away; and all its final consonants reduced to the same monotonous nasal. To prevent the confusion that would thus have been occasioned in a monosyllabic language, where the possible number of different syllables denoting words was limited even before the corroding action of phonetic decay, tones were adapted to the expression of meaning, and as old letters disappeared new tones came into existence. To create a new tone, says Dr. Edkins, requires about 1,200 years.

The sentence-tone is inseparable from speech even of the most lifeless character. Each sentence has its own key, and the several parts of it their own pitch. The tone rises when we ask a question, it falls when we answer it, it reaches the "level" point of neutrality when we speak in monotone. But there are dialects and languages in which monotone is either acute or grave. "Thus in Scotch the rising tone is often employed monotonously, not only in questions but also in answers and statements of facts. In Glasgow Scotch the falling tone predomi-

nates."[1] In French, too, the rising tone is often used in making statements of fact.

Quite distinct from accent of pitch is accent of stress, though the close connection between the two may be gathered from the fact that in modern Greek the stress accent regularly answers to the acute and circumflex of the ancient language. Much of this regularity, however, may be due to the same pedantic revival which has resuscitated the dialect of Plato and Thucydides and substituted it for the "modern Greek" spoken half a century ago. Stress is the force with which the different syllables of words are uttered, and increased force is naturally accompanied by increased pitch. Stress, in fact, corresponds to syllable-tone and word-tone, emphasis—the stress of a sentence—corresponding to sentence-tone. Like pitch, it may be regarded as either rising, level, or falling. Stress, however, differs from pitch in its variability; there is no gradual fall, but a tendency "to sway to and fro," as Mr. Sweet expresses it. Rising stress may consequently be of varying degrees of force and falling stress of weakness, level stress, even in French, being practically unknown. Stress and pitch together give to speech its rhythmic character, and make it the lyric utterance in which man expresses his thoughts and his emotions. Where the rhythm is regular we have poetry and song, where it is irregular the language of ordinary prose. Stress is the great conservator of language; the chief counterpoise to the action of phonetic decay. The accented syllable will be preserved though all the other syllables

[1] Sweet: "Handbook," p. 35.

by which it is surrounded may disappear in pronunciation, just as the idea upon which emphasis is laid will hold out successfully against the attacks of age and forgetfulness. Winteler[1] has laid down the law that in accented syllables, liquids, nasals, and spirants are always long after a short vowel if followed by a consonant (e.g. *mān̄ly*, Germ. *ālt.*)

The loss of the accent of pitch in modern English and the consequent extension of the accent of stress have made us less observant of *quantity* than the grammarians of India or the poets of ancient Greece. All syllables, however, may be classed as long, half-long, or short, due to the duration of the force with which they are uttered. According to Brücke, the duration needed for the production of a long vowel is to that needed for the production of short vowels in the proportion of five to three, but Sievers remarks that this only applies to the oratorical pronunciation of modern literary German. In any case, the length of the same vowel may vary according to circumstances; it is long, for instance, in the English *sīz* (*seize*), short in *sĭs* (*cease*). Several of the Scotch dialects possess no long vowels at all, while in French most vowels are half-long, distinctly short accented vowels being final, as in *oui*.[2] Like vowels, consonants, too, may be long or short. In our own language final consonants are long after short vowels (as *hill*), short after long vowels (as *heel*), and *l* and the nasals are lengthened before sonants (as *build*), shortened before surds (as *built*). Short final consonants after

[1] "Kerenzer Mundart," pp. 142 sq.
[2] Sweet: "Handbook," pp. 59, 60.

short vowels make the pronunciation appear clipped, as in German words like *mann.*

Accent has considerable influence upon quantity. On the one side short vowels may be lengthened and pure vowels converted into diphthongs by the accent falling upon them. This is partly the origin of the Sanskrit *guṇa* and *vṛiddhi*, according to which a simple *ă* is raised to *â*, an *ĭ* to *ê* (*ai*) and *ai* (*âi*), and an *u* to *o* (*au*) and *au* (*âu*).[1] The lengthening of short vowels in Hebrew in a "pause," that is at the end of a sentence, is another example. In the German dialects monosyllables which end in a consonant frequently have their vowel changed into a diphthong by the accent, the original vowel appearing again as soon as an additional syllable is added. In our own English the short vowel of a monosyllable which ends in a sonant frequently becomes half-long when accented (compare *fog* with *fóggy*, *god* with *góddess*). On the other side, the absence of the accent may bring with it a diminution of quantity. Thus a diphthong may be shortened by being pronounced in the same period of time as is required for the pronunciation of a short vowel, or may even be reduced to the short vowel which lies midway between the two elements of which the diphthong consists. A short vowel, again, may be reduced to a vocalic consonant like the Slavonic *r*. Since much movement of the lips in speaking implies an

[1] In many instances, however, *guṇa* and *vṛiddhi* seem to be due to the presence of the vowel *a* in the following syllable, which has been anticipated, as in the case of the German *umlaut* or the Greek epenthesis (as in λόγοις for the locative λόγο-σι, and then, by false analogy, λόγοισι).

energetic enunciation, shortened syllables are naturally pronounced with passive lips. To this fact we must ascribe the numerous short syllables of modern cultivated English.

There is but little difference between a long or "strong" consonant and a doubled one. In the first case, the position of the vocal organs for pronouncing the consonant is retained with gradually decreasing force, until it is suddenly shifted to the position needed for the following vowel; in the second case it is shifted back again, when the force required to produce it is half spent. Strictly speaking, therefore, the consonant cannot be said to be doubled; there is simply a break or pause in the utterance of it, the force necessary to produce it being renewed before it has been fully exhausted. In English, French, German, or Slavonic the double consonants have become long ones; to find them still pronounced we must turn to Italian, Swedish, Finnic, or Magyàr. Analogous to a double consonant is the combination of a sonant with a surd, when assimilation does not take place, as in *has to do* or *has seen*. In Sanskrit and Greek aspirated letters could not be doubled, Sanskrit permitting only *kkh*, *tth*, and *pph*, and Greek only κχ, τθ, and πφ; hence it seems plain that there was either no glide or a glide practically inaudible.

It is obvious that the combination of a consonant and a vowel admits of an almost infinite series of variations according as the formation of the one or other sound is made prominent in pronunciation. The consonant may, as it were, swallow up the vowel; on the other hand, the vocal organs may be shifted to form the vowel while

they are still in the act of forming the consonant. Hence arise *mouillé* and labialized letters. If the front part of the tongue be raised and the lips opened while a consonant is being uttered, a palatalized or *mouillé* letter is the result, of which the Italian *gl* and *gn*, the Spanish *ll* and *ñ*, or the Portuguese *lh* and *nh*, may be regarded as examples. Still better examples, according to Sievers, are combinations of consonants with an original *i* in many Slavonic languages (*e.g.* Russian *nikto*). Certain consonants are incapable of being *mouillé;* gutturals, for instance, in whose formation the back part of the tongue plays so prominent a part can only be so by becoming palatals. Labialized sounds are those in which the lips are rounded while the pronunciation of a consonant is in process. Labials and gutturals show the same fondness for this labialization or "rounding," that the palatals and dentals do for mouillation; and a comparison of the derived languages proves that the primitive Aryan speech must have possessed a row of labialized or "velar" gutturals—*kw*, *gw*, *ghw*—of which the Latin *qu* and our own *cw*, *qu* are descendants. There is nothing to show that these velar gutturals were ever developed out of the simple gutturals; so far back as we can go in the history of Indo-European speech the two classes of guttural exist side by side, and the groups of words containing them remain unallied and unmixed. Γυνή and *queen* (*quean*) must be separated from γένος, *genitrix*, *kinder*, and other derivations of the root which we have in the Sanskrit *janâmi*, the Greek γίγνομαι, γείνομαι, and the Latin *gigno;* and the labialized *quies* can have nothing to do with the Greek κεῖμαι and κώμη (κύμη), our own *home* and

*ham-let.*[1] Both rounding and mouillation may be combined, as in the Danish *kyst, pynte,* and when occurring at the end of a word may frequently be explained from the analogy of cases in which the word is followed by a syllable beginning with *u* and *i*. Such an explanation, however, is more likely to be true of mouillation than of rounding; indeed, an *i* or *y* sound is very apt to develop itself after consonants in affected pronunciation, as in the English *kyind, duke* (for *dook*), or the Greek ζοϙκάς (δγοϙκας) for δοϙκάς and the Magyàr *ágy*, "bed." Conversely a palatal *i* or *y* may develop a dental sonant before it: thus the Italian *diacere* comes from the Latin *jacere*, the Low Latin *madius* from *majus*,[2] and the Greek ζειά (δγειά) and ζυγόν (δγυγόν) from *yava* and *jugum* (Sansk. *yugam*). In these instances we may trace the influence of emphasis; the parasitic letter is due to the attempt to speak with greater distinctness and solemnity.

But whether it be emphasis or the other two causes of change described in an earlier chapter, the pronunciation of sounds, like the meaning they convey, is in a constant state of flux. Nowhere is the dogma of Herakleitus, πάντα ῥεῖ, truer than in the history of speech. No two people pronounce exactly alike, nor does the same person always pronounce the same word or group of words in exactly the same way. Apart from the changes undergone by the pronunciation of words according to the sounds of the other words with which they may be associated, it is difficult

[1] The existence of these velar gutturals was first pointed out by Ascoli, and since by Fick and Havet.

[2] Diez: "Grammatik d. romanisch. Spr." (2nd edition), i. 248, 254.

to pronounce the same word when uttered singly twice in precisely the same way. The very effort to do so produces modification of the sound. Such shades of difference in utterance, however, are imperceptible to any but an unusually sensitive ear; it is only when the difference becomes considerable that it attracts notice. It then constitutes what we may term a variety, and such varieties we may hear sometimes from the lips of a single individual, sometimes from the members of a family, sometimes from those who live in daily contact and under the same conditions of life. The faculty of imitation is strong within us, and a particular pronunciation once started soon spreads, as it were instinctively, amongst those who are much together. It has often been observed how like the members of a family are to each other, not only in general appearance and manner, but still more in the use of similar expressions and idioms and the pronunciation of sounds. It is the same with schools, and to a less degree with universities to which the students come with their habits of phonetic utterance more or less formed: it has been said that the handwriting betrays the school at which the man has been educated; it may be said with equal justice that the mode of speaking does so too. In a savage state of existence, where tribe-life and village-life are on the one hand strict and intense, and the husband on the other hand sees but little of his wife and children, the conditions favourable to the growth of varieties in pronunciation are more numerous than among civilized men. The language of the nursery becomes in time the language of the tribe.

This phonetic variety may be broadly stated as mainly

due to differences in the structure of the vocal organs. Putting aside imitation and analogy, putting aside, too, all wilful and conscious changes of pronunciation such as those enumerated on page 205, a particular sound or a particular way of pronouncing a sound may be easier to one speaker than to another. Very slight differences in the physical formation of the organs of speech may produce the most important consequences. And when a habit of pronunciation has once been fixed, it is difficult to alter it. The child who is learning to speak will as readily learn Chinese as English, the Japanese *r* as the Northumberland *burr;* it is quite another matter when the attempt to catch the sounds of a new language has to be made in adult years.

Climate and food have, doubtless, an important effect in producing changes in the formation of the vocal organs; but at present we have no means of knowing the nature and extent of their influence. Professor March remarks of the change of *i* to *g* in Anglo-Saxon,[1] that "the movement (of consonants to vowels) is sometimes reversed, as when a nation moves northward, or northern peoples mix with a vowel-speaking race." The Rev. W. Webster has drawn attention to the nasal twang which distinguishes not only American English, but American Spanish, Portuguese, and French as well; and which seems to be due to the dryness and the extremes of the American climate, while he further suggests climatic influences for the origin of the loss of the aspirate in Spanish words like *hijo*, pronounced *ijo*, the

[1] "Comparative Grammar of the Anglo-Saxon Language" (1870), p. 28.

Latin *filius*, which in the fourteenth century still had *f*, and for the intensification of the aspirate in the corresponding Gascon words. We are all well acquainted with the hoarseness and roughness that exposure to the atmosphere lends to the voice, and the exercise and strength that a mountainous region gives to the lungs produce their effect in the vigour with which sounds are uttered. In cold countries the respiration is accelerated, while the air being denser contains a larger volume of oxygen.[1] The prognathism of the lower and older races of men, again, must have considerably modified their powers of utterance. "The lower jaw," says Dr. Rolleston, "which in every well-marked variety of the human species contributes very importantly towards the making up of its distinctive character, was in the brachycephalous Briton usually a very different bone from the lower jaw of his Silurian predecessor."[2] The strange fashions, too, which lead the savage to mutilate and deform his person, have frequently a very direct bearing upon phonology. Thus the loss and confusion of the labials and the excessive nasalization in the languages of the natives of the Pacific coast of America must be traced to the rings that are worn through the nostrils and lips of the people.[3] The Otyi-herero of South Africa is lisping in consequence of the custom of knocking out the four lower teeth, and partly filing off the upper front ones, to which also Professor Max Müller suggests the occurrence of the English, *th* and *dh* in the language may be due,

[1] See Robin and Verdeil: "Chimie anatomique," ii. p. 44.

[2] Appendix to Greenwell's "British Barrows" (1877), p. 645.

[3] Daa: "On the Languages of the Northern Tribes of the Old and New Continents," in the "Transactions of the Philological Society" (1856), p. 256.

and the Dinkas, who, like all the negroes of the White River, extract the front teeth of the lower jaw, have no sibilants.[1]

Whatever may be the causes which bring about varieties in pronunciation, certain it is that they are as continually making their appearance as varieties in the realm of natural history. Where they are unrestrained by the conservative tendencies of literature and education, they soon spread from the individual and the household and become species or dialects. The dialect itself may in course of time assume so marked a character of its own, and be so widely spoken as to be accounted a separate language; and will stand to the varieties and species destined to grow out of it in the relation of a genus to its species. But with this further development phonology has little to do.

It is otherwise with the changes which result in the rise of a new dialect. Comparative philology is based on the recognition that the same word will be represented by different combinations of sounds in a group of allied dialects or languages, and that each combination will be governed by a fixed phonetic law. An English *h*, for example, will answer to a Greek and Latin *k*, an English *t* to a German *z* and a Sanskrit *d*. When once a sound is given in a language, we may know the sounds which must correspond to it in the cognate languages. Now and then, of course, subordinate laws will interfere with the working of the general law; but unless such an interference can be proved, we must never disregard the

[1] "Sir George Grey's Library," i. p. 167; and A. Kaufmann: "Das Gebiet des weissen Flusses und dessen Bewohner" (1861), quoted by Max Müller: "Lectures," 8th edition, ii. p. 178.

general law for the sake of an etymological comparison, however tempting. To compare the Greek θεός with the Latin *deus* and the Sanskrit *devas*, rests upon almost as unstable a foundation as the old derivation of *whole* from ὅλος, and *call* from καλέω.[1] We must never forget that the laws of phonology are as undeviating in their action as the laws of physical science, and where the spelling does not mislead us will display themselves in every word of genuine growth. Even the vowels cannot be changed and shifted arbitrarily; they, too, follow definite laws of development, and though it is not yet possible to state their equivalence in the several languages of a single family with the same precision as in the case of the consonants, we may feel quite sure that this is the fault of our ignorance and not of the facts themselves.

It was the great Grimm who, following in the wake of Rask, first formulated the empiric law of that regular *Lautverschiebung*, or shifting of sounds, in our Indo-European family of speech which has since gone under his name. Since his time the law has been the subject of much discussion and examination;[2] his statements have been amended and amplified, and an endeavour made to apply the same law to the vowels that has been applied to the consonants. The following table[3] exhibits the equivalence of sounds in the Aryan family of speech:—

[1] See, however, Ascoli's ingenious attempt to remove the phonological difficulties in his "Studj Critici," ii. (1877), pp. 386-396.

[2] For a recent English examination of the subject see Douse: "Grimm's Law: a Study" (1876), and Rhŷs's review in the "Academy," Jan. 12, 1878; also Murray and Nicol in the "Academy," Feb. 23, March 2 and 16, 1878.

[3] The table of consonants is taken from Rhŷs: "Lectures on Welsh Philology," p. 17.

| | K | Kw (Kᵛ) | G | Gw (Gᵛ) | GH | GHw (GHᵛ) | T | D | DH | P | B | BH | G | N | M | R | V | S | A | Aᵃ | A | I | U |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Old Welsh.** | c | p | g | b, m? | b | t, th | d | ... | b, m | b | m | ng | n | m, b | r, l | j, ddj, dd | gu, u | h | \| | \| | \| | \| | \| |
| **Old Irish.** | c, ch | c, ch | g | b, m? | b | t, th | d | ... | b, m | b | m | ng | n | m, b | r, l | ... | f, b | s | \| | \| | \| | \| | \| |
| **Gaulish.** | c | p | g | b? | g | b? | t | d | ... | p | b | ng | n | m | r, l | j | v | s | \| | \| | \| | \| | \| |
| **Church Slavonic.** | s | k, p | z | g | x | t | d | d | d | p | b | n, ng | n | m | r, l | j | v | s, ch | e | o | a | \| | i | u, o, ŭ |
| **Lithuanian.** | sz | k, p | ż | g | x | t | d | d | d | p | b | ng | n | m | r, l | j | v | s | e | o, a | a | \| | i | u |
| **Modern High German.** | h, g | w, f | k, ch | qu, k | g | g, w? | d, t | z, ss, ss | t, th | pf, f | b | ng | n | m | r, l | j | w | s, r | \| | \| | \| | \| | \| | \| |
| **English.** | h, g | wh, f | k, ch | qu, c | g, y | g, w? | d, th | t | d | f, b | p, f | b | ng | n | m | r, l | w | s, r | \| | \| | \| | \| | \| | \| |
| **Gothic.** | h, g | hv, f (þ), h | k | kv | g | g, v? | th, d | t | d | f, b | p, f | b | ng | n | m | r, l | j | s, z | e | \| | a | \| | i | u, au |
| **Oscan and Umbrian.** | k | p | g | b | h | ? | t | d | h | f | p | b | ng | n | m | r, l | j | s, r, z | e | \| | \| | \| | i | u |
| **Latin.** | c | qu, c, v | g | [g]v, b | h, g | v, gv, g | t | d, l, d, b[a] | f | f, b | p, b | b | ng | n | m | r, l | j | s, r | e, ae | o, e | a, o | ā, i | i | u, o, i |
| **Greek.** | κ | π, τ, φ | γ | β, γ' | χ, φ | τ | σ | δ | θ | φ | π | β | γ | ν | μ | ρ, λ | ϝ, υ, ι | σ, ς | ε | ο | α, ο | η, ω | ι | υ |
| **Zend.** | ç | k, ch, p | z, sh | g, j, zh, k | z | g, j, zh | t | d | d | p, f | b | n | n | m | r | r | v | h, s | a | \| | \| | ā, ē | i | u |
| **Sanskrit.** | ś (ç) | k, ch, p | j, sh | g, j, k | h | [g] h | t | [d] h | [d] h | p, ph | [b] h | n | n | m | r, l | y | v | s | a, ā | e, i, u, l, d | | ā, ē | i | u |

*,* For notes, see next page.

Some of the changes of sound recorded in the above table are as old as the undivided Aryan speech itself. They go back to the dialects that existed in the earliest period of which our materials allow us to know. Instead of clinging, with Fick, to a genealogical tree, and deriving the Aryan languages of Europe and Asia from two parent-stems, Western and Eastern Aryan, and these again from a single *Ursprache* or primitive speech, it is better to follow J. Schmidt in tracing the later languages to co-existent dialects, which by the loss or absorption of intermediate dialects and the migration of the speakers became more and more distinct and divergent one from the other. It is, of course, quite possible that the speakers of the most western of these dialects moved across the Ural range into Europe in a compact body, and there settled for a while in a district westward of a line drawn from Königsberg to the Crimea, where the beech grew, and that it was from this second home of the Aryan race that the waves of European emigrants successively broke off. Certainly Professor Fick seems to have shown the common possession of certain phonetic peculiarities, such as the vowel *e*, by the Western as distinguished from the Eastern Aryans, and the Eastern or Indic branch of the family clearly once formed a single whole which subsequently divided into Iranian and Hindu. Unfortunately the position of Armenian and the allied dialects is still a matter of doubt; and there are scholars who

[1] Before *v*.

[2] In the middle of a word, *e.g. ruber* (ἐρυθρός).

[3] *P* did not exist in the early Keltic languages; hence proper names like *Menapia* must be treated as non-Aryan, or at all events as non-Keltic.

would regard them as a link between the European and the Asiatic sections of the Aryan group. But Fick labours hard, and apparently with success, to prove that the Aryan dialects of Asia Minor, such as we know them from glosses and inscriptions, belonged to the European, not the Asiatic section, while Armenian, on the other side, is an Iranian tongue. Fick's conclusion is confirmed by the evidence of the cuneiform inscriptions. Up to the eighth century B.C. Armenia was still inhabited by tribes who spoke non-Aryan languages, and it was only a century previously that the Medes had first forced their way into the country regarded by the agglutinative Accadians as the cradle of their race, but which was afterwards to be the seat of the Aryan Medes. Eastward of the Halys there was nothing Aryan until long after the occupation of Armenia by the new-comers.

We have certain proof that the series of changes which resulted in the formation of High German took place subsequently to the overthrow of the Roman Empire. Latin words for instance like (*via*) *strata* or *campus*, adopted by the Teutons during the era of their wars with Rome, are found in both Low and High German in the very forms which the application of Grimm's law would require them to have were they native words. Thus *strata*, Low German *strata*, our *street*, becomes *straza* in Old High German, *campus*, our *camp*, similarly becomes *kampfi*, *kampf*. The Hessians were called Catti in Roman times, and though now High Germans, had the same ancestors as the Batavi, from whom the modern Dutch draw their descent, while the Malbergian glosses show the language of the Franks to have been Low German, although the

Franconians of to-day, who are descended from the same stock as the Suabians and Ripuarians, speak High German. Here, at any rate, we have an instance of a series of varieties finally resulting in a new language in historical times.

It must not be supposed that all the changes of pronunciation that serve to distinguish one branch of the Aryan stock from another took place simultaneously. On the contrary, they were slow and gradual; first one and then another new fashion in sounding words sprang up and became general: when once the new pronunciation had, from any cause, taken a firm hold of the community, analogy caused every word to be submitted to its influence, unless special reasons, such as accent, stood in the way, until in course of time the process of shifting the sounds was completed. An instructive illustration of this shifting of sounds has lately been going on almost under our eyes. In the Samoan Islands of the Pacific only fifteen years ago *k* was an unknown sound except in one small island of the group, where it replaced *t*. Since then it has practically disappeared from all of them, and *t* has taken its place. What makes the rapidity of the change the more extraordinary is that the speakers of the language live on separate islands, and that intercourse between them is less intimate now, according to Mr. Whitmee, than it was in the days of heathenism. And yet in spite of books and schools, in spite of education and every effort to check it, the change has come about. The natives will ridicule the foreigner who pronounces in the new fashion, they will themselves take pains to sound the *k* when reading aloud or making

a set speech, but in conversation it has ceased to be heard. The tendency to put *k* for *t* seems to be irresistible; it is in the air, like an epidemic, and the spelling, so recently introduced, no longer represents the common pronunciation of the people.[1]

We must be on our guard against thinking that the sounds represented by the same letter of the alphabet in different languages are really identical. We have seen of what numberless variations each sound that we utter is capable, and it does not follow that because the Sanskrit *cha* and the English *church* are written with the same palatal *ch*, that therefore they are to be pronounced alike. And what is true of the consonants is still more true of the vowels. There is much to show that the European scale of three short vowels—*ă*, *ĕ*, *ŏ*—is more primitive than the Indic single vowel *ă*, in which three distinct vowel-sounds of the parent-speech have coalesced, but we cannot infer from this that the three vowel-sounds of the parent-speech were actually *ă*, *ĕ*, and *ŏ*. Indeed, when we remember that the Greek ἑκατον (for ἑν-κατον) corresponds to the Latin *centum*, while *ferentis* is represented by φέροντος, it is quite clear that the Latin *ĕ* must have developed out of one or more sounds which were distinct from it. In dealing with the hypothetical Parent-Aryan it is best, with Brugman, to symbolize these three primitive vowels as $a^1$, $a^2$, and $a^3$.[2] It is possible that some at least of the

[1] Pratt: "Grammar and Dictionary of the Samoan Language" (edited by Whitmee), p. 1, 1878.

[2] To Brugman belongs the credit of first demonstrating the existence of these three distinct vowel-sounds in the Parent-Aryan (Kuhn's "Zeitschrift," 1877). Brugman has been criticized by Collitz in Bezzenberger's "Beiträge zur Kunde der indogermanischen

earlier sounds out of which more than one articulate sound have afterwards developed, were of a vague indeterminate character, not properly-formed vowel utterances. Professor Max Müller[1] quotes authorities to prove that in the Sandwich Islands *k* and *t* are undistinguished, and that "it takes months of patient labour to teach a Hawaian youth the difference between *k* and *t*, *g* and *d*, *l* and *r*."[2] The confusion between *k* and *t*, however, has already been explained by the similar fact observed in Samoan where the sound has actually changed within the last fifteen years, a distinctly-articulated *k* becoming an equally distinctly-articulated *t*. But even in English we find people saying *a cleast* instead of *at least*, while at Paris and elsewhere the lower classes say *amikié* for *amitié*, *charkier* for *charretier*, *crapu* for *trapu*.[3] So in

Sprachen," ii. 4 (1878), who maintains that the three primitive sounds were really *é*, *ŏ*, *á*, and not the indeterminate $a^1$, $a^2$, $a^3$. On the other hand, an able article by De Saussure in the "Mémoires de la Société de Linguistique de Paris," iii. 5 (1878), accepts Brugman's nomenclature, while criticizing and modifying some of his conclusions. His *a*, Brugman's $a^1$, became *e* in West Aryan, and is never weakened into *i* or *u* in Sanskrit. His $a^2$ (also Brugman's) is the West Aryan $o^2$, and in Sanskrit is lengthened in an open syllable (*e.g. jajâna* = γέγονε). In Latin *ŏ* often became *é*, as in *genu* (Greek γόνυ, Sansk. *jânu*). Different from this $o^2$ is another $o^1$, standing in the same relation to *a* that $o^2$ does in Latin to *e*, and answering to a Sanskrit *i* or *ĭ*. Besides this short $o^1$ is also a long *ó*, which appears also as *á*, and corresponds with Sansk. *á*. De Saussure further points out that velar *k* in Sanskrit is palatalized (becomes *ch*) when followed by *a* (= *é*) and $a^2$ (= *ŏ*).

[1] "Lectures," ii. pp. 184 *sq.* (8th edition).

[2] "The Polynesian," October, 1862.

[3] Agnel: "Observations sur la Prononciation et le Langage rustique des environs de Paris," pp. 11, 28; Terrien Poncel: "Du Langage," p. 49.

the old Paris argot *j'équions* stood for *j'étais*, and in Canada the uneducated part of the population says *mékier* for *métier*, *moikié* for *moitié*. Bleek, again, writes of the Setshuana dialects: "One is justified to consider *r* in these dialects as a sort of floating letter, and rather intermediate between *l* and *r*, than a decided *r* sound."[1] To these instances of confusion between two consonants which Professor Max Müller believes to be "a characteristic of the lower stages of human speech," may be added the fluctuation between two forms of the same sound in the North German dialects, where no distinction is made between surd and sonant *mediæ*, as well as in many of the Armenian dialects.[2] But we must bear in mind that this childlike inability to distinguish between sounds may be due to two very different causes. It may be a result either of the sound being formed at the neutral point, as it were, intermediate between two distinct sounds, or of the ear being unable to discriminate between different articulations. The latter cause is analogous to colour-blindness, and has most to do with the imperfections of childish utterance or the substitution of *r* for *l* so often heard; the other cause is of a purely phonetic character, and takes us back to the time when man was gradually fashioning the elements of articulate speech. This infantile state of language had probably been long left behind by the cultivated speakers of the Parent-Aryan; indeed, the very existence of the three vowels marked $a_1$, $a_2$, and $a_3$, would imply that such was the fact. If

[1] "Sir George Grey's Library," i. p. 135. Professor Mahaffy informs us of a child of three years of age who invariably substitutes *n* for *l*, and cannot be made to feel the difference between them.

[2] Sievers: "Lautphysiologie," p. 127.

there was any confusion in the pronunciation of their words it would have to be ascribed rather to sound-blindness than to imperfection of utterance.

The regular action of Grimm's law may be interfered with by the influence of other laws, just as in physical science the regular action of the law of attraction may be interfered with from time to time. Foremost among these disturbing agencies is the accent. K. Verner has shown[1] that the position of the accent has occasioned that apparent disregard of Grimm's law in the Teutonic languages which has produced *mutter* and *vater* (O. H. G. *muotar* and *fatar*) by the side of *bruder* (O. H. G. *brôpar*), *sieben* (Goth. *sibun*) by the side of *fünf* (Anglo-Saxon *fîf*), *schwieger* (O. H. G. *swigar*=ἑκυρὰ, *so-cru-s*) by the side of *heil* (Greek καλός), or such a curious change in the conjugation of the same verb as the Anglo-Saxon *lîde*, "I sail," but *liden*, "sailed." The same cause has brought about the varying representation of an original *f* now by *s*, and now by *z* or *r*. In the Veda, *bhrâtar* is accented on the first syllable, like the Greek φράτηρ, *mâtár* and *pitár* on the last, again like the Greek μήτηρ and πατήρ. *Sieben* answers to the Vedic *saptán*, the Greek ἑπτά, whereas *fünf* is the Vedic *pánchan* and Greek πέντε. *Schwieger* similarly goes back to the Vedic *'swa'srû'*, Greek ἑκυρά, just as the O. H. G. *snura* from *snuza* goes back to the Vedic *snushâ'*, Greek νυός, in contradistinction to *nase*, *nose*, the Vedic *nâ'sa*, the Lithuanian *nósis*. If we turn to the verb, we find that in Anglo-Saxon, whereas the present *lîde*, "(I) sail," corresponds with a

[1] Kuhn's "Zeitschrift," xxiii. pp. 97-130 (1877).

Vedic *bhédâmi*, and the singular of the past tense *lâd* with a Vedic *bibhéda*, the plural of the preterite *lidon* corresponds with a Vedic *bibhidús*.[1]

There are other influences besides that of the accent which may change and mar the face of words. Although every change takes place in strict accordance with phonetic laws, and is consequently capable of explanation, the occurrence of the changes is more or less sporadic and arbitrary. That is to say, they may act upon one word and not upon its neighbour. In *should* or *would*, for instance, *l* has been assimilated to *d*, but in *fold* and *cold* it still maintains its existence. Such changes may be either independent or dependent on the action of surrounding sounds. The diversification of the Teutonic *a* into *e* and *o*, or the transition of the Latin *ĭ* and *ŭ* into Romanic *e* and *o* are instances of independent change. So, too, the modern English pronunciation of the vowels with passive lips, and the consequent loss of the intermediate vowels *ü* and *ö*, is another example of the same facts. Wherever, indeed, these intermediate vowel-sounds exist, we may feel sure that the lips take an active part in articulation. In all these cases the change happens in the formation of

[1] The termination of the participles of German weak verbs, such as the Goth. *tami-da* ("domitus"), answers to the Vedic *dami-tás* (like the Greek κλυτός) where the accent is oxytone. Verner sums up his conclusions as follows: (1) The original accentuation was preserved in Teutonic even after the introduction of those changes of sound characteristic of the Teutonic branch of the Aryan family; (2) the accent, however, was no longer purely tonic, it had become also an accent of stress; (3) the exceptional representation of an Aryan *k*, *t*, and *p* at the beginning of a syllable by a Teutonic *g*, *d*, *b* is due to the original accentuation of the words in which it occurs; and (4) this is also the case with *z* or *r* in the place of *s*.

the sound, uninfluenced by the neighbourhood of other sounds. The extension of a simple vowel into a diphthong may also be brought under this head, though the presence of the circumflex accent seems to have much to do with it. On the other hand, changes in the dentals, the passage of *s* into *r* and *r* into *l*, or the transition from a guttural to a palatal and a dental, are all examples of purely independent change. When we find an Aryan *kw* (*k*²) and *gw* becoming *ch* and *j* in Sanskrit or *τ* in Greek, we merely see the gradual forward movement of the tongue, which is moved with less exertion towards its tip than towards its root. The change of Aryan *kw* and *gw* into *p* and *b* in Greek (as in πίτυρες and βίος[1]) is held by Sievers to be due to a sudden "leap" in the articulation, *k* and *g* partially assimilating the second part of each compound into *p* and *b*, and then falling away altogether.

Most of the changes recorded in Grimm's law may be brought under the head of independent change. No doubt the transition of *g*, *d*, *b*, into *k*, *t*, and *p* in German is partially dependent upon the accent, but the growth of an aspirate out of a *tenuis*, as exemplified in the Irish pronunciation of English, is probably due to nothing but an increase in the energy and duration with which our breath is expired. The want of the stress accent brings about the shortening and loss of final vowels, the tonic accent, on the other hand, tending to lengthen them.

The changes caused by the action of one sound upon another may be divided into those which are due to assi-

[1] Sanskrit *jîv*, Latin *vivo* (*vixi*), English *quick*, presupposing an original reduplicated *gwi-gwi*.

milation, and those that are not. In either case the time occupied in pronouncing the changed sound remains the same as it was before; it is only in cases of independent change that it may differ. Assimilation is effected in one of two ways. The relative positions of the vocal organs needed for the pronunciation of two sounds may be made to approximate, as in the reduction of *ai* (*a*+*i*) to *e*, or the time that elapses between the pronunciation of two sounds may be reduced or destroyed altogether, as when *supmus* becomes *summus*. Where the change is not due to assimilation, it will be found to depend on an alteration in the time needed for the formation of two or more sounds.

Assimilation may be regressive, progressive, or reciprocal. Regressive assimilation is where a sound is assimilated to that which follows it, as in ἔννυμι for *Fεσ-νυμι*, from the root *vas*, or ποσσί for ποδ-σι (ποδ-σ*F*-ι), and γράμμα for γραφ-μα(τ). Progressive assimilation is the converse of this, as in στέλλω for στελ-*yω*, μᾶλλον for μαλ-ιον, *mellis* for *melv-is*, or the Æolic ἔστελλα for ἔστελ-σα. Regressive assimilation largely preponderates in our Aryan languages, progressive assimilation in the Ural-Altaic ones; and it is very possible that Sievers is right[1] in tracing this contrast to the difference of the accentuation, which in Ural-Altaic falls upon the first syllable of the word, while in the parent-Aryan it fell for the most part on the final syllable. Böhtlingk[2] says, very appositely: "An Indo-Germanic word is a real whole of such a kind that the speaker has uttered the whole word, as it were, in spirit,

[1] "Lautphysiologie," p. 137.

[2] "Jenaer Literaturzeitung" (1874), p. 767; quoted by Sievers.

as soon as he has pronounced the first syllable. Only in this way can it be explained how a syllable (or sound) is modified in order to assist the pronunciation of the syllable (or sound) that follows it. A member of the Ural-Altaic race forces out the first syllable of a word—that part of it, namely, which has the accent—little caring for the fortune of the rest; on this he next strings in more or less rude fashion a few more significant syllables, only thinking of a remedy at the moment when he first feels the want of one." As for reciprocal assimilation, an example of it may be found in the reduction of *ai* to *e* quoted above, where both sounds influence one another.

Assimilation may be either complete or partial. There are sounds which can never be thoroughly assimilated to each other, *bn*, for instance, can never at once become *nn*, only *mn*. Partial regressive assimilation meets us very frequently in the classical languages; *e.g.*, λεκ-τός from the root λεγε, ἥνυσμαι from ἀνυτ-, δόγμα from δοκ-; partial progressive assimilation is rarer; *e.g.*, πάσχω for πάσκω from παθ-σκω.

The changes dependent on the presence of a second sound, which are not due to assimilation, are necessarily produced by varying the time needed for pronunciation. Of these the most striking is metathesis. Metathesis must be referred rather to a mental than to a phonetic origin. Our thought and will outstrip our pronunciation, the result being that the sound which ought to follow is made to precede, or else the vocal organs are shaped prematurely for the formation of a sound which ought to be heard later, the consequence being that the sound which should come first has to come last. Metathesis, in fact,

is similar to the rapidity, or rather relaxation, of thought which leads us sometimes to write or speak a word which belongs to a subsequent part of the sentence; and it may be of two kinds: either the place of two sounds may be simply inverted, or the second sound may be made to precede the first by two or three syllables. How easily the first case can happen is shown by the phonograph, where each syllable that has been uttered can be reproduced backward by merely turning the handle of the machine the wrong way. *R* and *l* are the most subject to metathesis, then the nasals; the other consonants vary according to their relationship to the vowels. More regular than metathesis are the insertion and omission of consonants, as in ἀν-δ-ρὸς, ἄ-μ-β-ροτος, τέτυφθε for τέτυφσθε, *rêmus* for *resmus*. Somewhat different are the insertion and omission of vowels, the first of which goes under the technical name of *Swarabhakti*. This name was imported from the Hindu grammarians by Johannes Schmidt,[1] to mark the growth of a short or reduced vowel from a liquid or nasal, when accompanied by another consonant. Thus *ănman*, "name," became *ănă-man*, and then, by the loss of the first vowel and the compensatory lengthening of the second, *nômen* and *nâmâ*. *Swarabhakti* is, however, incompatible with the acute accent. We may find examples of it in the slow pronunciation which in English turns *umbrella* into *umbĕrella*, and *Henry* into *Henĕry*.[2]

[1] "Zur Geschichte des indogermanischen Vocalismus," ii.

[2] According to the current theory the sonant or vocalic *n*, *l*, and *r* develop out of a consonantal *n*, *l*, *r*. Fick (Bezzenberger's "Beiträge," iv., 1878) has shown that Greek aorists like ἔδρακε or παθών owe their *a*-vowel to this cause. The accentuation of the last syllable occasioned the loss of the vowel of the present-stem (which Fick

Prosthesis, or prothesis, the insertion of a short vowel at the beginning of a word before two consonants, is another illustration of *Swarabhakti*. There are many nations which find a difficulty in pronouncing two consonants at the beginning of a word. Thus the Bengali calls the English *school yschool*, the Arab says *Iflatún* for *Platon*, and the Ossete uses *a* for the same purpose. In other cases, one of the consonants is dropped altogether, as so frequently by children and systematically by the natives of Polynesia. In Latin inscriptions and MSS. later than the fourth century we find forms like *istatuam*, *ispirito*, just as in the Romanic tongues we have *estar* and *espée* (*épée*) for *stare* and *spada*, or in Welsh *ysgol* from *schola*, *yspryd* from *spiritus*. According to Wentrup,[1] *a* is often used as a prothetic vowel in Sicilian; Lithuanian has forms like *iszkadà*, German "*schade*," and Basque and Hungarian prefix a similar aid to the pronunciation. No trace of a prothetic vowel can be found in Latin; in Greek, however, such vowels are very plentiful. Thus we have ἄσταχυς by the side of στάχυς, ἐχθές by the side of χθές, ἰγνύη by the side of γόνυ, Ὀβριαρευς by the side of Βριαρέυς. In Greek, too, as in other languages where prothesis occurs, the complementary vowel may be inserted before a liquid, more especially *r*, as well as before a strictly double consonant, *e.g.*, ἀμύνω by the side of μύνη, ἐρυθρός by the side of

proves to represent the oldest form of the verb), and out of the resulting ἔδρκε or πθών grew ἔδρακε and παθών. The corresponding Swarabhakti vowel in Teutonic is *u* (cfer. ἑκατόν, *i.e.* ἑκαντόν for ἑκντόν, and Gothic *hund* (our *hundred*), ἄρκτος, and Gothic *vulfs*, -ματός and Gothic participial *-munds*). According to the Indian grammarians the Sanskrit *ṛi* = ½ *a* + ½ *r* + ½ *a* (Greek ἄρᾰ̆).

[1] "Beiträge zur Kenntniss der Sicilianischen Mundart," p. 154.

*ruber*, ὀρέγω by the side of *rego*. Even the digamma may perhaps take the prefix as in the Homeric ἐεδνον. But it is probable that no other single consonant does so, the apparent exceptions being really explained by the loss of a consonant which once existed along with the one that is left. Ὀκέλλω, for instance, presupposes ὀ-κFέλλω (Latin *pellere*), Ἀπόλλων presupposes Α-κFολιων, "the son of the revolving one" (Sanskrit *char*, Greek πέλομαι). In other cases we are dealing not with a prothetic vowel, but with a part of the primitive root: ὄνομα, for example, is shown by the Irish *ainm* and Old Prussian *emnes* to be more original than the Sanskrit *nâmâ* or the Latin *nomen*, and to stand for an earlier *an-man*; and ὄνυξ, the Latin *unguis*, the Irish *inga*, is earlier in form than the Sanskrit *nakha* and the English *nail* (*nagel*)[1]. We may discover a tendency in Greek to adapt the prothetic vowel to that of the root, though it is hardly so regular as in Zend roots beginning with *r*, where we find *i-rith* for *rith*, but *u-rud* for *rud*. Sanskrit, like Latin, shows an inclination rather to drop initial vowels than to add them, but even in Sanskrit, Curtius has pointed out[2] the Vedic *i-raj-yâmi* from *raj* (*rego*) and *i-radh*, "to seek to obtain," from *râdh*. As for the loss of a vowel, it is too familiar to every one to need any illustration.

More akin to metathesis is epenthesis, which closely resembles the Teutonic *umlaut*. Epenthesis is especially plentiful in Greek, where κτέν-γω becomes κτείνω, χερ-ιων χείρων, λόγοσι λόγοις, ἐλαν-Fω ἐλαύνω, νερFον νεῦρον. Probably λέγει

[1] See Joh. Schmidt: "Ueber Metathesis von Nasalen," in Kuhn's "Zeitschrift," xxiii. pp. 266-302 (1877).

[2] "Grundzüge" (2nd edition), p. 650.

for λεγειτ is to be explained as resulting from the epenthesis of ι (λεγειτ for λεγετι), just as λέγεις stands for an earlier λεγεσι. Epenthesis thus presupposes a mouillation or labialization in which the articulation of the consonant is absorbed, as it were, by that of the *i* and *u*. The greater the participation of the lips and tongue in the formation of these vowels, the greater will be the tendency towards epenthesis.

Lastly, we have to consider the lengthening of vowels, either by way of compensation or before certain consonants. By compensation is meant the additional force with which a vowel is pronounced after the loss of a consonant which followed or preceded it. Thus in Greek the loss of the digamma in βασιλεϝ-ος produced the Ionic βασιλῆος on the one side and the Attic βασίλεως on the other, just as the loss of the *yod* in πολιγ-ος similarly produced πολῆος and πόλεως. So, too, πάνς became πᾶς, δαμως δαίμων, ἐφαν-σα ἔφηνα, *rĕs-mus rēmus*, *pĕds pēs*, *exāgmen exāmen*, *māgior mājor*. In certain cases the vowel was raised into a diphthong, as in φέρουσι for φεροντι, τιθεῖς for τιθεις, ἔστειλα for ἐστελσα. But a vowel may also be lengthened before liquids, nasals, and spirants when combined with another consonant. If the grave or the circumflex accent fall upon the preceding vowel, the tendency is to lengthen the vowel at the expense of the sonant or spirant following. Hence it is, that whereas in our English *tint*, or *hilt*, where the vowel has the acute, the nasal and liquid are long; in *kind* and *mild*, on the other hand, where the vowel is circumflexed, it is the vowel (or rather the diphthong) that is long. The vowel, again, may be lengthened to compensate for the loss of a double letter.

Thus in Latin we find *vīlicus* by the side of *villicus*, from *villa*, and whereas the grammarians lay down that when *ll* is followed by *i*, single *l* must be written, we find *millia* in the famous inscription of Ancyra. So, too, the inscriptions vary between *Amulius* and *Amullius*, *Polio* and *Pollio*, and good MSS. have *loquella*, *medella*, instead of *loquēla*, *medēla*.

There is another fact to be remembered when we are looking for the application of Grimm's law—a fact which the law itself ought to bring to our minds. Different languages have different phonetic tendencies; the same sound is not equally affected by phonetic decay in two different dialects or modified in the same way; each language has phonetic laws and phænomena peculiar to itself. Thus, in Greek, σ between two vowels is lost, in Latin it becomes *r*; in Greek a nasal preserves, or perhaps introduces, the vowel *a*, in Latin it prefers the vowel *e*. Because τ between vowels becomes σ in Greek, or *sr* in Latin is changed into *br* (as in *cerebrum* for *ceresrum*, κέρας, *'siras*), we are not justified in expecting similar changes in other tongues. In fact we have only to look at the table of sound-changes, known as Grimm's law, to see that it is just because two languages do not follow the same course of phonetic modification that a scientific philology is possible.

To speak of Grimm's law being "suspended," of "exceptions to Grimm's law," and the like, is only to show an ignorance of the principles of comparative philology. Grimm's law is simply the statement of certain observed phonetic facts, which happen invariably, *so far as we know*, unless interfered with by other facts which, under

given conditions, equally happen invariably. The accidental has little place in phonology, at all events in an illiterate and uncultivated age. Literature and education are no doubt disturbing forces: a writer may borrow a word without modifying its sound according to rule; and the word may be adopted into the common speech through the agency of the schoolmaster; but such words are mere aliens and strangers, never truly naturalized in their new home, and the philologist must treat them as such. Native words, as well as words which, though borrowed from abroad, have been borrowed by the people and so given a native stamp, undergo, and must undergo, all those changes and shiftings of sound which meet us in Grimm's law, in the phonetic laws peculiar to individual languages, or in any other of the generalizations under which we sum up the phænomena of spoken utterance. False analogy, it is true, may divert a word from the path it would naturally have taken; one word may be assimilated to another regardless of its real etymology, or words whose real origin has been forgotten may be modified so as to convey a new meaning to the speaker. But, in such cases, the worst that could happen would be the loss of the true etymology; Grimm's law would still hold good, and the originals of the existing sounds would be those demanded by the regular *Lautverschiebung*. So far as the present form of a word like *Shotover* (for *château vert*) is concerned, it is to the mere phonologist, as to the ordinary speaker, a compound of *shot* and *over*, and in comparing these two words with allied words in other languages the prescribed letter-change holds good. It is only the comparative philologist, who has to deal

with the psychological as well as with the phonetic side of language, that needs to know more, and to determine that *Shotover* is not what it professes to be, but the product of a more or less conscious imagination. In most cases of analogy we have to do with mental as opposed to phonetic assimilation, and they fall, therefore, under sematology, the science of meanings, rather than under phonology, the science of sounds. No doubt we find instances of analogy, like the Greek accusative βεβαῶτα, modelled after the nominative βεβαώς,[1] or the Latin genitives *diei*, *dierum*, modelled after the accusative *diem* for *diam*, but such instances fall under the laws and conditions of that phonetic assimilation which has been already described. Let us hold fast to the fact that the generalizations, the chief of which are summed up in the formula known as Grimm's law, are at once uniform and unvarying. If an etymology is suggested, which violates these generalizations, that etymology must be rejected, however plausible or attractive. It is upon the fixed character of these generalizations that the whole fabric of scientific philology rests.

Necessarily similar generalizations may be made in the case of other languages which, like the Aryan, can be grouped into single families of speech; nay, they must be made before we are justified in grouping them together, or in comparing and explaining their grammar and vocabulary. It is not always, however, that the changes of sound are so marked and violent as in the Indo-European. A group of allied languages may be as closely related to one another as the modern Romanic dialects of Europe,

[1] Brugman in Kuhn's "Zeitschrift," xxiv. p. 81 (1878).

and various causes may have combined to give a stability and fixity to their phonology which has made it change but slightly in the course of centuries. This is the case with the Semitic dialects, whose laws of sound-change are extremely simple. Practically the sound shiftings are confined to the sibilants, where the equivalence of sounds is as follows:—

| Assyrian. | Hebrew. | Ethiopic. | Arabic. | Aramaic. |
|---|---|---|---|---|
| *s* (*sh*) | *s* (*sh*) | *s*, *'s* | *sh*, *s*, *th* | *'s*, *s*, *th* |
| *'s* | *'s* | *s*, *'s* | *s*, *sh* | *'s* |
| *ts* | *ts* | *ts* | *ts*, *ds*, *dhs* | *ts*, *dh*, *'e* |
| *z* | *z* | *z* | *z*, *dh* | *z*, *d* [1] |

One or two other general laws of phonetic change may be laid down for special members of the Semitic group; thus, in Assyrian, *s* before a dental becomes *l*, and *kh* is dropped when it answers to the Arabic and Ethiopic weak *kh*. In the Babylonian dialect, again, *k* took the place of *g*, and the *n* of the other dialects is sometimes replaced by *r* in Aramaic.

[1] Recent researches seem to have shown that the parent-Semitic possessed two dentals, which may be written *ṯ* and *ḏ*, and are represented in Arabic by *th* and *dh* (ذ), and in Assyrian, Hebrew, and Ethiopic by *s* (*sh*) and *z*. Consequently the table of sound-shiftings will be—

| Parent-Semitic. | Arabic. | Assyrian. | Hebrew. | Ethiopic. | Aramaic. |
|---|---|---|---|---|---|
| *ṯ* | *th* | *s* | *sh* | *s* | *th* |
| *ḏ* | *dh* | *z* | *z* | *z* | *d* |
| *t* | *t* | *t* | *t* | *t* | *t* (*th*) |
| *d* | *d* | *d* | *d* | *d* | *d* |
| *sh* | *s* | *s* | *sh* | *s* | *s* |
| *s* | *sh* | *s* | *s* | *sh* | *sh* |
| *'s* | *s* | *'s* | *'s* | *s* | *sh* |

But the Semitic idioms are dialects rather than languages, so intimate is the connection between them, so slight the differences by which they are separated. It is quite otherwise if we turn to a group like the Malayo-Polynesian, where the word *oran*, "man," may be represented in the different dialects by *rang*, *olan*, *lan*, *ala*, *la*, *na*, *da*, and *ra*.[1] But here, too, the law of equivalence is fixed and determinate: the Samoan *s* is changed into *h* in Tongan and Maori, while the Maori *k* is dropped in Samoan.

Equally extensive is the series of changes undergone by sounds in the Ugro-Finnic tongues, and when the law of sound-shifting has been determined not only for the Ugro-Finnic division of the Turanian family, but for the whole Turanian family, comprising Turkish, Mongol, and Mandshu, we may expect it to include a far larger number of changes of sound than that summed up in Grimm's law. So far as the Ugro-Finnic dialects are concerned, M. de Ujfálvy, in continuance of the investigations of Riedl,[2] has been able to lay down the following rules for the phonetic permutations observable in these idioms: (1) The Finnish and Bulgar *k* becomes *kh* in Ostiak, Vogul, and Old Magyár, and *h* in modern Magyár; (2) *k* = *ts*; (3) *k* or *g* = *s*, *z*, *ṣ*, *j*, *ts*, &c.; (4) Finnish *ks* = Votiak *hs* (earlier *ht*); (5) Finnish *kl*, *pl* = Lapp *vl*; (6) Medial Finnish *k* and *h* = Bulgar and Ugrian *v* and *f*; (7) Initial Finnish *h* disappears in Livonian and Lapp (in Lapp also becomes *v* before a dental); (8) Finnish *h* = *s*, *ṣ*, *ts*, *sy*, *ts* (*c*), *ẓ*, *tsy*, &c.; (9)

[1] Logan: "Indian Archipelago," iii. p. 665.
[2] "Magyarische Grammatik" (1858).

Finnish and Bulgar *k*, *g*, *h* = Lapp and Ostiak *ng*, *n* = Magyar *g*; (10) Medial Finnish *nk* = Lapp *gg*; (11) Finnish *nt* = Lapp *dd*; (12) *gy*, *ny* = *y*, *v*; (13) *t* = *s* (Finnish *t* = *s*, *ṣ*, *sy*, *ts*, *z*, *ẓ*, &c.); (14) Finnish *s*, *h* = Ostiak and Vogul *t*; (15) Finnish *p* = Votiak *b* = Magyar *b*, *f*; (16) Finnish *t* = Magyar *s*, *z*, *ts*; (17) Finnish *m* = Lapp *bm*; (18) Lapp *dn* = Finnish *nn* or *n*; (19) Finnish *mb* = Lapp *bb*; (20) Finnish *kk*, *tt*, *pp* = Vêpse and Livonian *k*, *t*, *p*; (21) Finnish *k*, *t*, *p* = Vêpse and Livonian *g*, *d*, *b*. This list of phonetic equivalents will make it clear that the original phonology of the Ugro-Finnic group is generally best represented by Suomi or Finnish; in some cases, however, Vêpse (or Tchude) is more archaic than Finnish, and in one case, that of the change of *t* into *s*, Ostiak and Vogul are more primitive than Suomi. Vêpse, again, shows that the long vowels of Suomi are due to contraction. Within Suomi itself *kk*, *tt*, and *pp*, after a liquid are softened into simple *k*, *t*, and *p*. The diphthongal consonants of Magyár (*ly*, *my*, *ty*, &c.), are the result of a contraction of a consonant and a vowel or diphthong following. The changes undergone by sounds within the Ugro-Finnic group may be summed up as a whole in the two formulæ: (1) The Finnish hard explosives are represented by soft explosives in the other languages of the group; (2) spirants, and the sounds derived from them, answer in the allied dialects to the explosives of Finnish. As for the Samoied idioms, similar phonetic permutations may be discovered in them also. In the Yurak dialect *h*=*s*, *ng*=*nr*, and *k*=*ts*; in Tavghi *k* and *t* tend to become *g* and *d*; in Yenissei *dd*=*md* (*nt*, *nd*, *ntt*, *ltt*), *gg*=*rk* (*rg*) or *nk*, and

*bt*, while in Ostiak-Samoied and Kamassinche the l explosives pass into the soft *g*, *d*, *b*.[1]

uite as regular as the permutations of sounds in Finnic group is the law of sound-change discovered 3leek to exist in the Bâ-ntu or Kafir family. The ıwing table gives it for the principal members of the ıp :—

| ıfir. | Se-tshuana. | Herero. | Ki-suahili. | Ki-nika. | Mpongwe. | Bunda. |
|---|---|---|---|---|---|---|
| *ḳ* | *kh, h* | *k* | *k, g* | *k, g* | *k, g* | *k* |
| *g* | *k* | *ng* | *ng* | *ng* | *ng* | *ng* |
| *ṛ* | *r, s* | *t* | *t* | *h* | *r, ty* | *t* |
| *ḍ* | *l, r* | *t* | *nd* | *nd* | *nd, l* | *nd, r* |
| *ḅ* | *p, f, h* | *p* | *p* | *v, h* | *v* | *b* |
| *ḅ* | *b, p* | *v* | *b, w* | *b, '* | *v* | |
| *s* | *ts, s* | *t, ty* | *s, k* | *s, dz* | *z, k, '* | *s, k* |
| *z* | *ts, l, r* | *z, h* | *z, dz* | *z, ts* | *dz, g, s* | *sh, g* |
| *f* | *f, h, s* | *s* | *f* | *f* | *w* | *f* |
| *v* | *b, r* | *s* | *f* | *f* | — | *f* |
| *l* | *l, r* | *r* | *l* | *r, l* | *l, nl* | *l* |
| *n* | *n* | *n* | *n* | *n* | *n* | *n* |
| *n* | *m* | *m* | *m* | *m* | *m* | *m* |

he Bâ-ntu law of sound-shifting has the advantage · its Aryan analogue, that it deals with actually ex- ıg sounds which can still be heard and noted by the ntifically trained ear, whereas many of the Aryan ;uages and sounds recorded in Grimm's law are now nct. The Aryan philologist, accordingly, has to me that the spelling of Sanskrit, Greek, Latin, and hic words is a fair approximation to their pronuncia- . It is upon this assumption that the whole fabric istorical grammar is built; nay, comparative philology f, which began with the comparison of allied forms

[1] De Ujfálvy, in the "Revue de Philologie et d'Ethnographie," pp. 20-50.

and words in the classical languages of India and Europe, is also based upon it. The assumption offers little difficulty to the Italian, whose spelling accurately represents his pronunciation, or to the German, who writes pretty much as he speaks; but it need not be pointed out how strange and unnatural it seems to the Englishman. English spelling, under the guidance of the printers, has become a mere system of marks and symbols, arranged upon no principle, selected with no rational purpose, each of which by a separate effort of the memory is associated with some sound or word.

For the scientific philologist, no less than for the practical teacher, a return to the phonetic spelling of our English language is of the highest importance. What the philologist wishes to know is not how words are spelt, but how they are pronounced, and this end can be obtained only by means of an alphabet in which all the chief sounds of the language are represented, and each character represents but one sound. No doubt the practical man does not want the alphabet required by the phonologist, who must denote every shade of sound and have separate symbols for the sounds heard not in English only, but in other languages as well, but the alphabet of the practical man should be based on that of the phonologist. The reformed alphabet should be one which would enable the child or the foreigner to recognize at once the sound of the word he is reading, and the philologist to determine the pronunciation of the writer.

Thanks to Messrs. Ellis, Pitman, and others, the question of reforming our English spelling has not only been brought before the public, but the conditions under

it is practicable have been discussed and ascer-
and the merits of rival schemes put to the test.
unds of the English language have been analyzed,
ıe great work of Mr. A. J. Ellis on the "History
glish Pronunciation" has shown how our absurd
omalous spelling grew up. At the present time
ve in the field the phonotype of Mr. Pitman—an
et of thirty-eight letters—a large proportion of
have new forms; the palæotype and glossic of
llis, the former retaining the type now used by
nters, but enlarging the alphabet by turning the
and similar devices, the latter by its likeness to
ɜsent spelling intended to bridge over the passage
he present or "Nomic" mode of spelling to the re-
l one; the narrow and the broad Romic of Mr.
the second an adaptation of the first to practical
he ingenious system of Mr. E. Jones, which by the
ɣment of optional letters for the same sound con-
to introduce little *apparent* difference in the spell-
English words; and several other English and
can systems that have been proposed, more espe-
he reformed alphabet of the American Philological
ation, together with the transitional alphabet in-
l to lead on to it. Some of these are true phonetic
ıets, words spelt in them varying according to the
ıciation of the writer, others are merely attempts
ɔrm the present spelling of English words by
g it more consistent, and bringing it more into
ny with their actual pronunciation. Such attempts
only substitute a less objectionable mode of spell-
r the existing one, a mode of spelling, too, that

would in course of time become as stereotyped and far removed from the pronunciation of the day as is the present system. With such attempts, therefore, the scientific philologist can have but little sympathy; his efforts must rather be directed towards the establishment of a phonetic alphabet, based on a thorough analysis of English sounds and conformed to practical requirements.

The question of spelling reform is nothing new. Mr. Ellis has brought to light a MS. written in 1551 by John Hart of Chester, and entitled "The Opening of the unreasonable writing of our inglish toung: wherin is shewed what necessarili is to be left, and what folowed for the perfect writing therof." This the author followed up by a published work in 1569, called "An Orthographie, conteyning the due order and reason, howe to write or painte thimage of mannes voice, most like to the life or nature."[1] The object of this, he says, "is to vse as many letters in our writing, as we doe voyces or breathes in our speaking, and no more; and neuer to abuse one for another, and to write as we speake." Hart, however, it would seem, tried to amend the pronunciation as well as the spelling of English. The year before (1568) Sir Thomas Smith, Secretary of State in 1548, and successor of Burleigh, had published at the famous press of Robert Stephens in Paris, a work, "De recta et emendata linguæ anglicæ scriptione, dialogus." In this he had suggested a reformed alphabet of thirty-four characters, *c* being used for *ch*, ð for *th* (in *then*), and θ for *th* (in *think*), long vowels being indicated by a diæresis. In 1580 came another book in black letter on the same

[1] Reprinted by I. Pitman in 1850.

ıbject, by William Bullokar. His alphabet consisted of ıirty-seven letters, most of which have duplicate forms, nd in which *c'*, *g'*, and *v'*, represent *s*, *j*, and *v*. He composed a primer and a short pamphlet in the orthography e advocated. In 1619, Dr. Gill, head-master of St. 'aul's School, published his "Logonomia Anglica," /hich was quickly followed by a second edition in 1621. Iis alphabet contained forty characters, and, as might ıe expected from his position, his attempt to reform :nglish spelling was a more scholarly one than those of ıis predecessors. He found a rival in the Rev. Charles 3utler, an M.A. of Magdalen College, Oxford, who rought out at Oxford, in 1633, "The English Grammar, r the Institution of Letters, Syllables, and Words in the :nglish Tongue." He printed this phonetically, accordıg to his own system, as well as another book, "The `eminine Monarchy or History of the Bees" (Oxford, 634). "These," says Mr. Ellis, "are the first English ooks entirely printed phonetically, as only half of Hart's ras so presented. But Meigret's works were long antelor in French." Butler represents the final *e* mute by '. n 1668 Bishop Wilkins published his great work, the Essay towards a Real Character and a Philosophical anguage." In this he has a good treatise on phonetics, ı which he probably made use of an important work on ıe physiological nature of sounds, brought out by John /allis, Savilian Professor of Geometry at Oxford, in 553;[1] and he has transcribed the Lord's Prayer and

[1] The "Grammatica Linguæ Anglicanæ," to which is prefixed a ıatise "De Sonorum omnium loquelarium formatione: Tractatus ammatico-physicus."

Creed in his phonetic alphabet of thirty-seven letters. After Bishop Wilkins the matter rested for a while; but in 1711 the question of reforming English spelling was once more raised, this time, however, in a practical direction. Dean Swift appealed to the Prime Minister to appoint a commission for "the Ascertaining, Correcting, and Improving of the English Tongue."[1] His appeal, however, was without effect; and the next to apply himself to the subject was Benjamin Franklin, who, in 1768, put forth "A Scheme for a New Alphabet and reformed mode of Spelling, with Remarks and Examples concerning the same, and an Enquiry into its Uses." Franklin embodied his views in a letter to Miss Stephenson (dated September 20th, 1768), written in his phonetic alphabet, and intended to meet objections to the proposed reform. It is curious to find the wholly mistaken objection already put forward that "all our etymologies would be lost" by a reform of spelling.

But spelling reformers have not been confined to England. Ninety years ago a reform of Dutch spelling was successfully carried out, though the result was unsatisfactory, as might have been expected from the ignorance of phonology that existed at the time. Spanish spelling has recently undergone revision on the part of the Academy; and even German, which seems to the Englishman so far advanced on the road towards perfection, is in process of reformation. The work was begun by Schleicher, who not only struck out the aphonic *h* and other useless letters, but even emulated the Emperor Claudius by inventing a new character. A committee

[1] Swift's "Works," ix. pp. 137-139 (edit. Sir W. Scott).

was lately appointed by the Minister of Education to decide upon such changes of spelling as seemed to them desirable, and a thorough-going system of reform, with a new alphabet, like that of Mr. Pitman, has been inaugurated through the exertions of Dr. Frikke and others.[1]

Of scientific alphabets, also, the phonologist has now his choice. Putting aside Melville Bell's "Visible Speech," in which each character symbolizes by lines the action of the vocal organs in forming the sound it represents, the best are the well-known "Standard" and "Missionary Alphabets" of Lepsius and Max Müller, the alphabets of Ellis and Prince L-L. Bonaparte, and the alphabet of Sweet. Max Müller's alphabet is founded on that of Sir W. Jones, and he brings with justice the charge against Lepsius's "Standard Alphabet" that its physiological analysis is sometimes wrong, and that many of its characters have been found too complicated for use. Sweet's alphabet has the advantage of avoiding new type, of having special signs for voice and whisper, for quantity and stress, force, pitch, and glide, and of indicating by a full stop the place of a "force-impulse." Prince L-L. Bonaparte's alphabet, however, as edited by Ellis, is the most complete; indeed, out of his 385 characters, there occur a few which have not been detected in any known language. The two last alphabets will be found in the Appendix to the present chapter.

It is possible that the phonograph may hereafter assist us in constructing a more perfect alphabet than is now

[1] The monthly journal of these reformers, published at Bremen, is entitled: "Reform. Zeitšrift des algemeinen fereins zur einfürung einer fereinfahten deutšen rehtšreibung."

possible. Just as Melville Bell's letters have a physiological origin, so the letters of the alphabet of the future may be derived from the forms assumed by sounds on the sensitive plate of the phonograph. The phonautograph had already informed us that every sound we utter has a distinct shape and pattern; it only remained to apply this fact practically by the invention of the phonograph.

The phonautograph as constructed by Barlow, Léon Scott, and König, is made to record the sounds of the human voice by the help either of a pencil or of a gas-flame. The pencil is set in motion by a thin membrane, against which sounds and words are spoken, and draws on a cylinder covered with sand the curves which delineate the sounds uttered. When a gas-flame is employed, the forms assumed by it take the place of those drawn on the sand. In Edison's phonograph the fact that the form of every sound can thus be imprinted on a tangible substance has been utilized for the reproduction of speech. A plate of tin-foil is folded round a revolving cylinder indented from one end to the other with a spiral groove. As the cylinder revolves the groove is kept constantly beneath a needle, which is attached to a membrane or sounding-board, against which the voice is impinged through a conical aperture: with each sound that is uttered the needle presses the tin-foil into the furrow below, imprinting upon it at the same time the form of the sound. By reversing the process the needle is made to travel once more over the indented tin-foil, and the sounding-board being thus set in motion reproduces the sounds originally spoken. Before the tin-foil is thus

reduced to its original smoothness, a cast of it may be taken, and at any subsequent period another piece of tin-foil may receive the impression of the cast, and so reproduce the words which first caused the indentations. It is needless to point out the assistance which the phonograph is likely to render to phonology. It is still, of course, new and faulty, and unable, for instance, to reproduce sibilants; but it cannot fail to be improved and become almost as perfect a speaking-machine as the human throat itself. Already it has contributed some facts of importance to phonetic science. Thus we find that all sounds may be reproduced backwards by simply beginning with the last forms indented on the tin-foil, *sociability*, for example, becoming *ytilibaishos*. Diphthongs and double consonants may be reversed with equal clearness and precision, so that *bite*, which the phonograph pronounces *bâ-eet*, becomes *tee-âb*. In this way we have learnt that the *ch* of *cheque* is really a double letter, the reversed pronunciation of the word being *kesht*.

The problem of reproducing human speech has thus been approached more successfully from the physical and acoustic side than from the physiological side, where it was attacked by Faber, Kempelen, and others. They attempted to construct instruments in which the vocal organs could be represented with the greatest exactness attainable, the lungs being replaced by a pair of bellows, the trachea by a hollow tube, and so on. But though these instruments spoke, it was not in human speech, or anything like it The utmost they could do was to imitate the first utterances of a child, or the imperfect and laboured syllables of one who is learning a foreign tongue.

Nevertheless, it is not in the organs of the human voice any more than in the mechanism of a lifeless instrument that we have to discover the source and creator of speech. All that the vocal organs can do is to supply the skeleton into which the mind breathes the breath of life. Unmeaning sounds do not constitute language: until a signification has been put into them, the sounds that have been described and analyzed are no better than the singing of the birds, the stirring of the trees, or even the dead utterances of a machine. Phonology, like anatomy, deals only with the dry bones which have yet to be clothed upon with living flesh.

But by its very nature a science of meanings, sematology, as it has been named, can never have the same certitude, the same exactness, as a science of sounds. The laws of sematology are far less distinct and invariable; significant change cannot be reduced to the same set of fixed rules as phonetic change. The phenomena with which sematology deals are too complicated, too dependent on psychological conditions; the element of chance or conscious exertion of will seems to enter into them, and it is often left to the arbitrary choice of an individual to determine the change of meaning to be undergone by a word. Still this meaning must be accepted by the community before it can become part of language; unless it is so accepted it will remain a mere literary curiosity in the pages of a technical dictionary. And since its acceptance by the community is due to general causes, influencing many minds alike, it is possible to analyze and formulate these causes, in fact, to refer significant change to certain definite principles, to bring

it under certain definite generalizations. Moreover, it must be remembered that the ideas suggested by most words are what Locke calls "mixed modes." A word like *just* or *beauty* is but a shorthand note suggesting a number of ideas more or less associated with one another. But the ideas associated with it in one mind cannot be exactly those associated with it in another; to one man it suggests what it does not to another. So long as we move in a society subjected to the same social influences and education as ourselves we do not readily perceive the fact, since the leading ideas called up by the word will be alike for all; but it is quite otherwise when we come to deal with those whose education has been imperfect as compared with our own. A young speaker often imagines that he makes himself intelligible to an uneducated audience by using short and homely words; unless he also suits his ideas to theirs, he will be no better understood than if he spoke in the purest Johnsonese. If we are suddenly brought into contact with experts in a subject we have not studied, or dip into a book on an unfamiliar branch of knowledge, we seem to be listening to the meaningless sounds of a foreign tongue. The words used may not be technical words; but familiar words and expressions will bear senses and suggest ideas to those who use them which they will not bear to us. It is impossible to convey in a translation all that is meant by the original writer. We may say that the French *juste* answers to the English *just*, and so it does in a rough way; but the train of thoughts associated with *juste* is not that associated with *just*, and the true meaning of a passage may often depend more on

the associated thoughts than on the leading idea itself. Nearly every word, in fact, may be described as a complex of ideas which is not the same in the minds of any two individuals, its general meaning lying in the common ideas attached to it by all the members of a particular society. The significations, therefore, with which the comparative philologist has to concern himself, are those unconsciously agreed upon by a body of men, or rather the common group of ideas suggested by a word to all of them alike. Here, again, some general causes must be at work which may yet be revealed by a careful analysis. The comparative philologist has not to trouble himself, like the classical philologist, with discovering the exact ideas connected with a word by some individual author; it is the meaning of words as they are used in current speech, not as they illustrate the idiosyncrasies of a writer, which it is his province to investigate.

"The genealogies of words," says Pott,[1] "are the genealogies of concepts." As in phonology we have the growth or decay of sounds, so in sematology we have the growth or decay of ideas. The three principles of linguistic change, imitation, emphasis and laziness, are incessantly at work on the meanings as well as upon the sounds of words. Analogy is ever lending them new senses, and the metaphorical senses may come to be used to the utter forgetfulness of the original one. The Latin who spoke of his "mind" or "soul" as *animus* had altogether forgotten that at the outset *animus* was merely the "wind" or "breath." Here analogy or

[1] "Etymologische Forschungen," v. p. xxii.

imitation is helped by laziness, which makes us forget a little-used meaning. *Impertinent* has almost lost its prior and proper signification, and our children will have to seek it in the records of an obsolescent literature. But a dead meaning may again rise to life; the early meaning of a word, whether recovered from books or from the fresh spring of a local dialect, may once more impress itself upon a community anxious to emphasize and mark out an idea by an unfamiliar term.

Professor Whitney[1] has summed up significant change under the two heads of specialization of general terms and generalization of special terms, but a more thoroughgoing attempt to determine its laws and distinguish its causes has been made by Pott.[2] First of all, he points out, words may be more accurately defined either by widening or by narrowing their signification. While in the Neo-Latin languages *caballus*, "a nag," has taken the wider meaning of "horse" in general, under the form of *cavallo* or *cheval*, the modern Greek ἄλογον is no longer the "irrational beast," but is narrowed into the specific sense of "horse." Like our *deer*, which once meant "wild animals" generally (German *thier*), so *emere* has narrowed its primary signification of "taking" into the special one of "buying." But, on the other hand, when we speak of "going to town," it is not "town" in general or any town whatsoever that is meant, but London alone.

Then, secondly, there is metaphor, with its ceaseless play upon speech. Language is the treasure-house of

[1] "Language and the Study of Language," p. 106.

[2] See his "Etymologische Forschungen," v. i., Introd. (2nd edition).

worn-out similes, a living testimony to the instinct of man to find likeness and resemblance in all he sees. The Tasmanians, who had no general terms, had yet the power of seeing resemblances between things: though they could not form the concept "round," they said "like the moon" or some other round object. All the words which have a spiritual or moral meaning go back to a purely sensuous origin: *Divus*, *Deus*, *Dieu* was once "the bright sky;" *soul* was nothing but the "heaving" sea. It is only by likening such ideas to the objects of sense that we can imagine them at all, or convey a hint of our meaning to others. The vocabulary of a language on its significant side grows by metaphor and analogy. We have only to take a word like *post*, once the Latin *positum*, "what is fixed" or "placed," and trace it through its many derived meanings of "stake," "position," "office," "station," "public medium of correspondence," and "receptacle for letters," to see how endless are the shades of colour which a single word may catch from those with which it is associated. To know the idioms of a language and the conditions under which its speakers live, is often to know the history of the changes in signification undergone by its vocabulary. The mere expression "send to the post" gave to the word *post* its last meaning of a building in which letters are deposited and sorted, and the conditions of schoolboy life are a clue to many of the metaphorical uses of words which bear quite another meaning in school life from what they do in ordinary language. Where else but in a country of examinations could "pass" signify to go through an examination with success? Each craft, each industry has its own store of

technical words, many of which are merely words in common use employed in particular senses intelligible only to those who belong to it.

Words, thirdly, will vary in meaning according to their application to persons or things, to what is good or bad, great or small. What a difference there is, for instance, between a "beautiful woman" and a "beautiful picture," "a fine day" and "a fine fellow." *Silly*, again, is simply the German *selig*, "blessed," and such is still its meaning in Spenser's "silly sheep;" but in modern English it has long lost its favourable sense, and is used only in an unfavourable one. Diminutives, originally the symbols of affection, have in many cases become the symbols of contempt, while "childishness" is as much a compliment when applied to a child as it is the reverse when applied to a man.

In the fourth place, words change their signification according to their use as active or passive, as subjects or as objects. "The sight of a thing" has a very different meaning from "the enjoyment of a sight," as different, in fact, as is the meaning of *venerandus* when applied to the object of veneration or to his admirer. The passive has been evolved from the middle τύπτομαι, "I beat myself" passing gradually into "I am beaten." In English we may say indifferently "a matter is reflected," or "a matter reflects itself," after the usage of French. Similarly a neuter verb may be regarded as an active followed by the reflective pronoun; our "to be silent," or "to walk," for example, are the French "se taire," "se promener."

Fifthly, an idea may be expressed either by a com-

pound or periphrasis, or by a single word. The Latin *nepos* is the French *petit fils*, our "ninety" the French *quatre-vingt-dix*. The Taic languages of Further India preserve the primitive habit of denoting a new idea by comparing it with some other to which it stands in the relation of species to genus. Thus in Siamese "a heifer" is *lúk nghoa*, "child (of a) bull;" "a lamb" is *lúk-ké*, "child (of a) sheep," much as in English *inkstand* is "a stand for ink." It is only by comparison that an object can be known, its limits marked and determined; it is equally only by comparison that an idea can be defined and made intelligible. But when this has once been done, there is no longer any need of setting genus and species side by side in speech and thought; to do so is but a survival of the early machinery of language. The fact that the derivatives of the Aryan speaker are replaced by compounds, or rather antithetic words, in Taic, shows not only the mental superiority of the former, but also the fundamental contrast that exists between the two modes of thought. Collectives imply no small power of abstraction, and the collectives formed by antithesis in Taic are as much a proof of it as the existence of our "contentment" by the side of the Siamese *arói chái*, literally "pleasant heart."

In the sixth place, we must always keep steadily in view the relativity of ideas and of the words which denote them. The same word may be applied in a variety of senses, the particular sense which it bears being determined by the context. The manifold shades of meaning of which each word is capable, the different associations of ideas which it may excite, give rise to varieties of

signification which in course of time develop into distinct species. Hence come the idioms that form the characteristic feature of a dialect or language, and make exact translation into another language so impossible. Hence, too, that diversification of synonyms which causes words like *womanly* and *feminine* gradually to assume different meanings, and prevent us from saying "I am very obliged," or "I am much tired."

Seventhly and lastly, change of signification may follow in the wake of change of pronunciation or the introduction of new words. Phonetic decay may cause the old form of a word to be forgotten, and so allow it to assume the new meaning which has gradually been evolved out of its earlier one. This is the history of most of those inflections which can be traced back to independent words, such as the sign of the past tense in English, once the reduplicated perfect of *do*. The signification of *jeopardy* has travelled far from that of *jeu parti*, but preparation had first been made by the change of pronunciation. There are many myths and mythological beings which owe their existence to the same cause. It was not till Promêtheus had lost all resemblance in outward name to the *pramanthas* or "fire-machine" of India that he borrowed his attributes from προμήδομαι, and became the wise benefactor of mankind, the gifted seer of the future, whose brother was Epimêtheus, or "Afterthought." It is the same with the legends that group themselves round the distorted name of a locality. The nose of brass or gilt which adorns Brasenose College at Oxford could never have come into existence until the old *Brasing-house* or "Brewery" had been transformed, and the

phœnix that stands in the centre of the Phœnix Park at Dublin, would have been impossible without the assistance of Saxon lips, which turned the Irish *fion uisg* or "fine water" into *phœnix*. But change of pronunciation is especially serviceable in increasing the wealth of a language by producing two co-ordinate forms out of a single original one. In course of time the two forms assume different meanings, due to the different contexts in which they may be used, and when once all memory of the original identity has perished, the distinction of meaning becomes fixed and permanent, and tends to grow continually sharper. In the second century B.C. a Latin writer could still use *prior* as a neuter, *prios* or *prius* as a masculine; but a time soon came when *prior* was classed exclusively with other masculine nouns in *-or* or *-tor*, *prius* with neuter nouns like *genus*. So, again, the Latin infinitive active *amare* and the infinitive passive *amari* were at the outset one and the same—the dative singular of a verbal noun in *-s* (*amas-*), and one verb, *fio*, the Greek φυ(ι)ω, continued to the last to preserve a recollection of the fact by the length of the final syllable in *fieri* or *fiesei*, "to become." But the shortening of final syllables which characterizes Latin was early at work, and out of the dative *amasei* soon originated the two co-existing forms *amase* (*amare*) and *amasi* (*amari*). For a while they were used indifferently, but when the distinction that exists between the German *waren zu haben* and the English "were to be had" came to make itself felt, one form remained the property of the active, while the other was appropriated to the passive. But a consciousness of the origin of *amari* seems to have long

survived in the language, since there was a tendency to associate it more closely with the other forms of the passive voice by affixing to it the characteristic of the passive, *r* (*amarier*). What is here effected by the diversification of the same word, may also be effected by the diversification of two synonyms, one of which has come from abroad. Sometimes both may come from abroad, but at different times, the result being that whereas one of them has been naturalized in the language, the other is but the nurseling of a learned age. *Priest* and *presbyter*, for instance, have both descended from the same source, and were once identical in meaning. But not only may the old words of a dialect be thus affected by new comers, the foreign words may even succeed in destroying the native ones altogether. The same natural selection which has wellnigh extirpated many of the native plants of Central America in the presence of the imported cardoon, is also at work in language. Our Old English *sicker* has had to give way before *sure*, the Old French *sëur*, Provençal *segur*, Latin *securus*, and the Latin *equus* has been replaced in the Romanic dialects by *caballus*, "a nag." *Caballus* is at once an example of the way in which the meaning of a word may be widened, and of the operation of natural selection in the field of speech.

The etymologist must keep before him the laws both of phonology and of sematology before he can venture to group words together and refer them to a common root. For the etymologist is not merely a historian, or student of historical grammar; above and beyond the words which can be traced back, step by step, to their early forms, by the help of contemporaneous records, there

are many more, the derivation of which has to be constructed much in the same way that a palæontologist reconstructs a fossil animal by the help of a single bone. The task is often a difficult and a delicate one, and the best trained scholars may sometimes fail. The result of false analogy may be regarded as an organic form, or a foreign word, conformed possibly to the genius of the language which has borrowed it, may be mistaken for a native. The præ-Aryan populations of Greece or of Britain must have left some remains of their languages in the vocabulary of Greek and Keltic, and Greek and Keltic words which have been counted as Aryan may, after all, be but aliens. Apart from these dangers, there is further the double one of assuming a connection between ideas which have nothing to do with one another, and of separating ideas which start from a common source. On the one hand, we are apt to judge of primitive man by ourselves, and to fancy that the ideas which we associate together were equally associated together by him. On the other hand, we have only to turn to the Ugrian idioms, with their greater transparency and openness to analysis to see the passage of one signification in a root into another of a wholly different kind, accompanied by a modification of the vowel. Thus *karyan* is "to ring," and "to lighten;" *kar-yun* and *kir-yun*, "to cry," but *kir-on*, "to curse;" *kah-isen*, *koh-isen*, *kuh-isen*, "to hit," "stamp;" *käh-isen*, *köh-isen*, "to roar;" *keh-isen*, *kih-isen*, "to boil."[1] We have here the same symbolization of a change of meaning by a change of vowel as in the Greek perfect δέδωκα by the side of the present δίδωμι.

[1] Donner: "Z. D. M. G.," xxvii. 4 (1873).

The four facts to be remembered in etymology are thus summarized by Professor Max Müller.[1] (1.) The same word takes different forms in different languages. Each language or dialect has its peculiar phonetic laws and tendencies; because a particular interchange of sounds takes place in one language it does not follow that it does so in another. In Greek, for instance, *s* between two vowels is lost, in Latin it becomes *r*. Our English *two* is the same word, so far as origin is concerned, as the German *zwei*, the Latin and Greek *duo*, the Sanskrit *dwi*; the English *silly* is the German *selig*, "blessed." As words are carried down the stream of time, they change in both outward form and inward meaning, and this change is in harmony with the physiological and psychological peculiarities of the particular people that uses them. (2.) The same word, again, takes different forms in one and the same language. *Brisk*, *frisky*, and *fresh* all come from the same fountain-head, and *bank* and *bench* are the differentiated forms of which *banquet* is the Romanized equivalent. So, too, in French *noël* and *natal* are but forms of the same word of different ages, like *naïf* and *native*, *chétif* and *captif*. Then (3) different words take the same form in different languages. The Greek καλέω and the English *call* have as little connection as the Latin *sanguis* and the Mongol *sengui*, "blood," or the modern Greek *mati* for ὀμμάτιον, and the Polynesian *mata*, "an eye." To compare words of different languages together because they agree in sound is to contravene all the principles of scientific philology; agreement of sound is the best possible proof of their want of connection,

[1] "Lectures," ii. pp. 268 *sq.* (8th edition).

since each language has its own phonology and consequently modifies the forms of words in a different fashion. The comparison even of roots is a dangerous process, not to be indulged in unless the grammar of the languages to which they belong has been shown to be of common origin. What we call roots are only the hypothetical types to which we can reduce the words of a certain group of tongues; they are, therefore, merely the expression of the phonetic laws common to all the members of the group. But it does not follow that the selected phonetic laws which all the members of a certain group of tongues have in common are the same as the phonetic laws of another language or another group. Roots, moreover, owing to their shortness, their vagueness, and their consequent simplicity, are necessarily limited in number, while the ideas they convey are so wide and general as to cover an almost infinite series of derived meanings; to say nothing of the probability that many of them are to be traced to imitations of natural sounds. (4.) Different words, in the fourth place, may take the same form in one and the same language. The French *feu*, "fire," is the Latin *focus*; *feu*, "late," the Low Latin *fuitus* (from *fui*). So too the English *page*, in the sense of a servant, comes ultimately from the Greek παιδίον, *page*, in the sense of a leaf of a book, from the Latin *pagina*. An arbitrary and antiquated spelling may often keep up a distinction between such words in writing when in speaking all distinction has long since disappeared. The French *sang*, *cent*, *sans*, *sent*, *s'en*, the English *sow*, *sew*, *so*, are respectively pronounced in the same way. That no inconvenience would be caused by writing them in

the same way is shown not only by the fact that many words of similar sound but varying sense, such as *sound*, *box*, or *lie*, are not distinguished in writing, but also by the ease with which we can distinguish between them in conversation, although in conversation we are unable to dwell upon a word or view it by the light of the completed sentence, as is the case in reading. The scientific etymologist would welcome the accurate representation of sounds by symbols, his object is to know what sounds pass into others in the course of centuries, and this he can only ascertain when the spelling represents the pronunciation; the amateur etymologist had better leave the subject alone. Etymology is not a plaything for the amusement of the ignorant and untrained; it is a serious and difficult study, not to be attempted without much preparation and previous research. The etymologist must be thoroughly trained in the principles of scientific philology, he must have mastered both phonology and sematology, and he must be well acquainted with more than one of the languages with which he deals. Then and then only can his labours be fruitful; then, and then only will his work be a gain and not a hindrance. False etymologies stand in the way of true ones, and the charlatans who have brought the name of etymology into contempt have discredited the labours of better men. There is much in etymology which must always defy analysis, there is much which will have to be corrected hereafter, but this will matter little if we have once learnt the lesson that change of sound and meaning can only take place in accordance with fixed and invariable law. Etymology is but a means to an end, and that end is partly

the history of the development of thought and civilization as reflected in the fossil records of speech, partly the discovery and illustration of the laws which govern the shifting and decay of sounds and the modifications of sense.

## APPENDIX I. TO CHAPTER IV.

### THE VOCAL ORGANS OF ANIMALS.

COMPARATIVE anatomy is the foundation of modern physiology: to understand the human organism we must compare it with the organisms of the lower animals. This is as true of the organs of speech as of the organs of locomotion or sensation, and we shall find that, in spite of varying degrees of development, the vocal organs of both man and beast present a general resemblance to each other. Some of the quadrumana have large sacs between the thyroid cartilage and the *os hyoideum*, which have much to do with modifying and increasing the resonance of the voice. The laryngeal sacs possessed by some of the monkeys of Africa cause the acuteness of tone and hoarseness of cry that characterize them. The great intensity of the voice in the American "howlers" is due to the size of the epiglottis and the existence of large cavities in the thyroid cartilage and *os hyoideum* which communicate with the ventricles of the larynx and the laryngo-pharyngeal sacs. The bray of the ass has been traced to two large sacs existing between the vocal

chords and the inner surface of the thyroid cartilage. Some of the marsupials, such as the kangaroo, have membranous vocal chords which stretch upon themselves and so cannot be stretched by the arytenoid muscles. A few of the mammalia, *e.g.* the giraffe, the porcupine, and the armadillo, have no vocal chords, and are therefore mute. This is also the case with the cetacea, the bellowing of the whale being produced by the expulsion of water through the nostrils during the act of exspiration.

Birds possess a superior larynx which differs considerably from that of the mammalia, and has nothing to do with the production of sound. Below this is the inferior larynx at the lower end of the trachea, just before it bifurcates into the two bronchi. This is the organ of voice, and differs a good deal, both in form and structure, in the several species of birds. It is double, except in the parrot and a few other birds, and is almost always symmetrical. It is composed of the lower rings of the trachea united so as to form a tube, at the lower end of which are two protuberances, one in front of the other, and joined together in most birds by a thin rod of bone (the *os transversale*). To the upper edge of this bone is attached a delicate membrane (the *membrana semilunaris*), which is turned upwards, and to the lower edge another membrane (the *membrana tympaniformis*), formed of the membranous wall of the bronchus. The latter membrane is highly developed in singing birds, and still more so in speaking birds, and it can render the first-mentioned membrane (with which it is connected) tense when made to vibrate. In some birds the inferior larynx has as many as five muscles, in others none. It is wanting altogether in

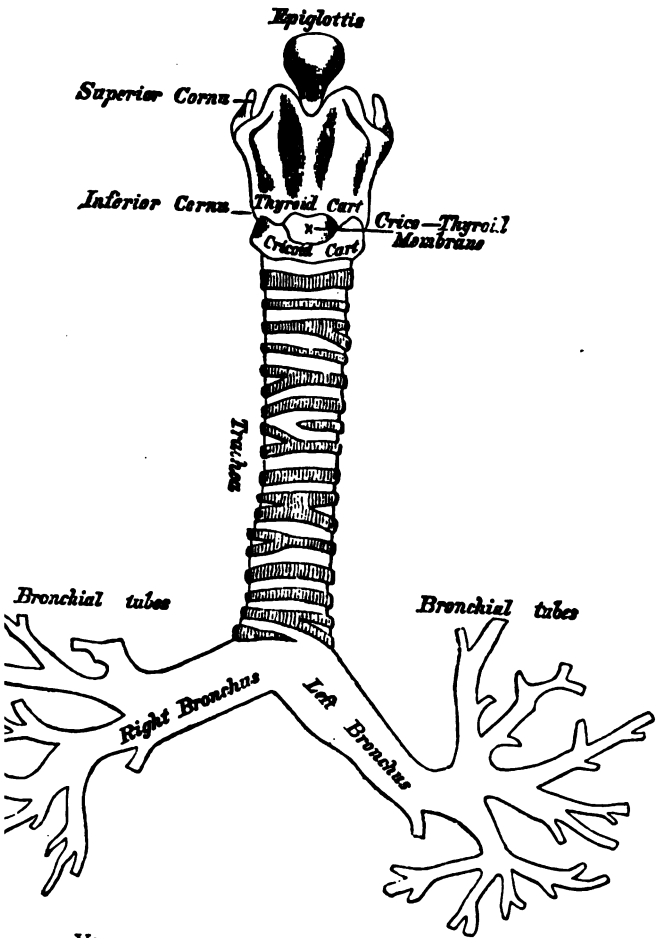
vultures. It will be seen that the two membranes correspond to the vocal chords in the mammalia, sounds being produced by the vibration of their margins. The various notes are caused by changes in the degree of tension of the membranes, by differences in the force of the air-current, and by changes in the length and degree of tension of the trachea and other parts. The range of the voice in birds is usually within an octave, but may be much greater.

Serpents have no vocal chords, and their hiss is the result of breath being forcibly driven through a soft glottis. Frogs have no trachea, so that their larynx opens into the bronchial tubes; but the loudness of the croaking of male frogs is due to the distension of two membranous sacs at the sides of the neck. Some frogs have membranous vocal chords: others two reed-like bodies, the anterior ends of which are fixed, while the posterior ends looking into the bronchi are free.

We must wait for the microphone to confute or confirm the statement of M. Langlois, of Freiburg, that ants communicate with one another by means of audible sounds. The recent observations of Sir John Lubbock seem to show the contrary. At all events, the sounds produced by most insects are produced externally and not internally. The stridulation of the cricket or grasshopper is made by rubbing certain file-like organs against the edges of membranous drums on the wings. The pitch of the sounds produced by the cricket is high, consisting of 4,096 vibrations per second. The shriek of the death's-head moth is produced by the friction of parts connected with the mouth and proboscis, the buz-

PLATE I.

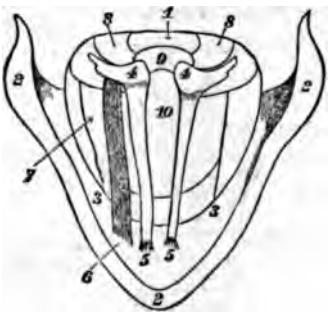
*Fig.* 1.




VIEW OF THE TRACHEA AND LARYNX.

## PLATE II.

*Fig.* 2.




VIEW OF THE LARYNX FROM ABOVE.

1, Crico-arytenoid ligaments; 2, thyroid cartilage; 3, cricoid cartilage; 4, arytenoid cartilages; 5, chordæ vocales; 6, the right thyro-arytenoideus lateralis; 7, the left crico-arytenoideus lateralis (the right being removed); 8, crico-arytenoid ligaments; 9, arytenoideus transversus (connecting the arytenoids); 10, rima glottidis.

*Fig.* 3.



1, Soft palate (velum pendulum palati); 2, uvula; 3, tongue; 4, hyoid bone; 5, thyroid cartilage; 6, epiglottis; 7, glottis; 8, trachea; 9, cricoid cartilage; 10, pharynx; 11, superior opening of larynx; 12, œsophagus; 13, orifice of Eustachian tube.

PLATE III.

*Fig.* 4.



Position for *a*.

*Fig.* 5.



Position for *e* (in *hay*).

*Fig.* 6.



Position for *i* (in *ke*).

*Fig.* 7.



Position for *u*.

*Fig.* 8.



Position for *k*, *g*, *ng*.

*Fig.* 9.



Position for *m*.

PLATE IV.

*Fig.* 10.



Position for *r*.

*Fig.* 11.



Position for *t*, *d*, *n*.

*Fig.* 12.



Position for *y*.

*Fig.* 13.



Position for *s*, *z*.

*Fig.* 14.



Position for *th*.

*Fig.* 15.



Position for *f*, *v*.

*Fig.* 16.



Position for *p*.

PLATE V.

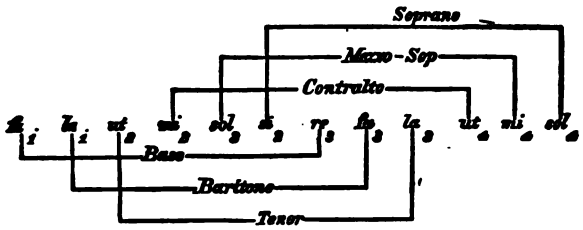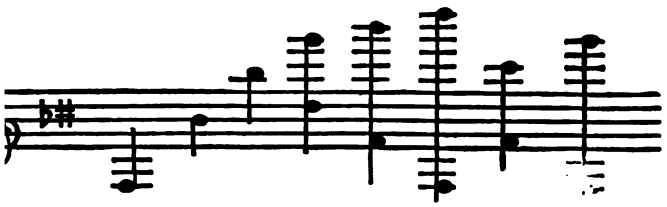
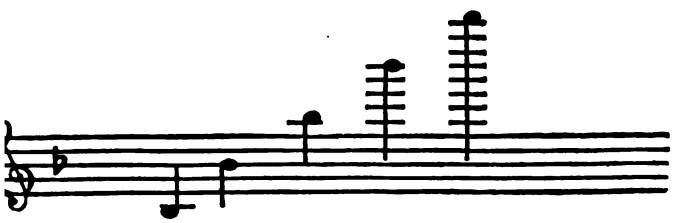



DIAGRAM SHOWING THE RANGE OF THE HUMAN VOICE.
(From McKendrick's "Outlines of Physiology," p. 642.)



| Vowels: | ou | o | a | ai | e | i | eu | u |
|---|---|---|---|---|---|---|---|---|
| Tones: | fa | sib | sib | sol | sib | re | ut♯ | sol |
| | 2 | 3 | 4 | 5 | 5 | 6 | 5 | 5 |
| | | | | re | fa | fa | fa | fa |
| | | | | 4 | 3 | 2 | 3 | 2 |

ch of the vowels, according to Helmholtz.



| Vowels: | ou | o | a | e | i |
|---|---|---|---|---|---|
| Tones: | sib | sib | sib | sib | sib |
| | 2 | 3 | 4 | 5 | 6 |

of Vibrations: 470, 940, 1880, 3760, 7520.
ch of the vowels, according to König.



zing of flies and gnats by the rapid vibration of two rudimentary posterior wings called *halteres*. The humming of humble-bees, beetles, and the like is due to the passage of the air through the spiracles.

Fish, with few exceptions, have no special sonorous apparatus. The noise they make when taken out of the water is caused by the sucking or flapping movements of their mouth or gill coverings. It is possible that the air-bladder opening into the pharynx which is possessed by some fish, may enable them to emit sounds.

## APPENDIX II. TO CHAPTER IV.

### THE ALPHABETS OF PRINCE L-L. BONAPARTE (MR. A. J. ELLIS) AND MR. H. SWEET.

PRINCE L-L. BONAPARTE'S Alphabet, as edited (and amplified) by Mr. A. J. Ellis in palæotype ("Early English Pronunciation," pp. 1293-1307, and 1352-1357).

THE VOWELS

(*as heard in European languages only*).

1. a (in *fAther*).
2. a, (in Gaelic *math*, "good").
3. aʌ (in Fr. *dent*, Port. *lá*).
4. ɪ (in Eng. *thE book*).
5. ·a (in Dan. *mand*, "man").
6. ah (in Eng. *ass*).
7. ə (in Eng. *charActer*).
8. æ (in Eng. *man*).
9. aʌ (in Port. *cAma*).
10. ɐ (in Eng. *pOllute*).
11. *œ* (in Gael. *laogh*, "calf").
12. *œ*, (in Gael. *mAOdal*, "tripe").
13. ɔ (in Eng. *bird*).
14. ɹ (in Eng. *ear*).
15. ɻ (not found).
16. ʾh (in Eng. *opEN*, Germ. *muttER*).
17. ʿʾh (not found)

18. ʻh (in Dan. *hat'*, Eng. *bit'*).
19. ə̈h (not found).
20. *a* (in Fr. *diable*).
21. Œ (in Roumanian *tatĂ*, "father.")
22. $E_1$ (not found).
23. E (in Finnic *pää*, "the head").
24. $e_1$ (not found).
25. $e_1$ (in Fr. *père*, Germ. *fett*).
26. $e_{1,}$ (in Gael. *freumh*, "root").
27. $e_1$ A (in Fr. *vin*).
28. e (in Eng. *bed*).
29. *e* (in Fr. *dé*, Germ. E*hre*).
30. *e*A (in Port. *s*EN*ha*, "sign").
31. $e^1$ (in Port. *c*E*ar*, "to sup").
32. $e^1$ (in Dan. *een*, "one").
33. *y* (in Welsh *dyn*, "man").
34. $Y_2$ (in Polish *bYli*, "they have been").
35. *i* (in Eng. *milk*).
36. $i^1$ (in Eng. *fill*).
37. i (in Eng. *bee*).
38. $i_{,}$ (in Gael. *s*INN*sreadh*, "ancestors").
39. iA (in Port. *sim*, "yes").
40. 'j (in Eng. *gate*).
41. ɔ (in Eng. *God*).
42. ɔ̈h (not found).
43. A (in Eng. *all*).
44. *a*h (not found).
45. $o_1$ (not found).
46. $o_1$ (in Germ. *Gott*).
47. $o_{1,}$ (in Gael. *did*O*mhnaich*, "Sunday").
48. $o_1$A (in Fr. *bon*).
49. o (in Eng. *more*).
50. oh (in Esthonian *wõlg*, "debt").
51. *o* (in Eng. O*mit*).
52. *o*A (in Port. *s*O*nho*, "dream").
53. *o*h (not found).
54. *u*h (in Port. *o*, "the").
55. $o^1$ (in Dan. *stor*, "great").
56. $u_1$ (in Finnish *Suomi*).
57. *u* (in Eng. *book*).
58. u (in Eng. *pool*).
59. $u_{,}$ (in Gael. *déan*ADH, "doing").
60. uA (in Port. *um*, "one").
61. ʻ*w* (in Eng. *home*).
62. $u^1$ (in Swed. *skuld*, "cause").
63. $u^1$ (in Lap. *j*U*kkim*, "I parted").
64. U (in Swed. *hus*, "house").
65. y (in Fr. *lune*, Germ. *brÜder*).
66. yA (in Basque *sũhia*, "son-in-law"; Albanian *hũni*, "he entered").
67. I (in Dan. *n*Y*de*, "to enjoy").
68. æh (in Lap. *buŏrre*, "good").
69. *ə*h (in Fr. *veuf*).
70. *ə*h A (in Fr. *un*).
71. œ (in Germ. *böcke*).
72. *ə* (in Fr. *feu*).
73. *ə*A (not found).
74. $œ^1$ (in Gael. *keayn*, "sea").

75. ɔ[1] (in Swed. *sYster*).
76. 'l (in Bohemian *vlk*, "wolf").
77. 'r (in Bohemian *prst*, "finger").

CONSONANTS.

*Labials.*

*Te.*[1] 78. p[2] (in Eng. *pea*).
79. pj (in Kasikumuk *p'orun*, "glass").
80. pp (in Italian *coppa*).
81. pɧ (in Bav. Germ. *pfard*).
82. ⌊pɧ (in Thush *p'e*, "side").
83. wh (in Eng. *which*).
84. pj (in Pol. *gąp*, "lounger").
85. p*w* (in Fr. *pois*).
86. p*wj* (in Fr. *puits*).
*Se.*[3] 87. b (in Eng. *bee*).
88. bj (in Kasikumuk *b'ar*, "pond").
89. bb (in Ital. *gobba*).
90. 'p (in Saxon Germ).
91. w (in Eng. *wine*).
92. bj (in Pol. *jedwa*B, "silk").
93. b*w* (in Fr. *bois*).
94. b*wj* (in Fr. *buis*).
*Ve.*[4] 95. m (in Eng. *me*).
96. mh (in Eng. *tempt*).
97. mm (in Ital. *fiamma*).
98. mj (in Kas. *'maq*, "thirst").
99. b, (in Westmoreland *sebm*, "seven").
100. w, (in Erse *saṁrad*, "summer").
101. mj (in Polish *kar*M, "feeding").
102. m*w* (in Fr. *moi*).
103. m*wj* (in Fr. *muid*).
*Hc.*[5] 104. ph (whispered bh; ? in Greek φ).
*Sc.*[6] 105. bh (in Spanish *haba*).
106. bh*w* (Dutch *w*).
*Ht.*[7] 107. prh (whispered brh).
*St.*[8] 108. brh (made by children with the lips).
109. ɯ (in Eng. *ve*R*y*).
110. ɹ *w* (in Eng. *our* occ.).

*Labio-Dentals.*

*He.* 111. P (not found).
*Se.* 112. B (lower lip against the teeth).
*Hc.* 113. f (in Eng. *foe*).
114. ff (in Ital. *schiaffo*).
115. *f* (not found).
116. ʻfh (not found).
117. fj (in Guernsey *fyaïz*, "flee ye").
118. f*w* (in Fr. *foie*).
119. f*wj* (in Fr. *fuite*).
*Sc.* 120. v (in Eng. *vine*).

[1] That is, hard-explosive.
[2] These characters represent the palæotype symbols employed by Mr. Ellis.
[3] Soft-explosive.
[4] Nasal-explosive.
[5] Hard-continuous.
[6] Soft-continuous.
[7] Hard-trill.
[8] Soft-trill.

121. vj (in Kas. *'warta*, "plate").
122. vv (in Ital. *avventura*).
123. ⌊v (in Dan. *Kjöbenhavn*).
124. *v* (not found).
125. 'v (Dutch *v*).
126. v H (not found).
127. vj (in Pol. *pa*W, "peacock").
128. v*w* (in Fr. *voix*).
*Nc.*[1] 129. v‿ (in Erse *fei*M, "mild").

*Labio-Linguals.*

*He.* 130. ˌp (in Abasian *a*T*à*, "hay").
131. ˌp ˌp (in Ab. *y*T*a*, "sit down").
*Se.* 132. ˌb (in Ab. *a*D*ỳ*, "field").
*Sl.*[2] 133. ˌlw (in Gaelic L*amh*, "hand").

*Dentals.*

*He.* 134. „t (in Erse T*alain*, "earth").
135. „tj (in Erse *tirm*, "dry").
*Se.* 136. „d (in Erse *donn*, "brown").
137. „dj (in Erse *dia*, "God").
*Hc.* 138. th (in Eng. *thin*).
139. c (not found).
*Sc.* 140. dh (in Eng. *then*).
141. *c* (not found).
*Hl.*[3] 142. ⊥h (not found).
143. ⊥ (in Manx *ooy*L, "apple").

*Alveolo-Dentals.*

*Hc.* 144. c (in West Nyland Finnish *metsä*, "forest").
145. ˌth (in Ital. *vizio*).
*Sc.* 146. *c* (in Albanian *zot*, "lord").
147. ˌdh (in Span. *li*D).

*Double Alveolars.*

*Hc.* 148. ˌs (in Ital. *lo zio*).
149. ˌs ˌs (in Ital. *pazzo*).
150. .ˌs (in Ab. *aca*, "granary").
151. ʃʃ (in Ab. *ac'abyrg*, "truth").
152. .ʃ (in Ab. *ácá*, "wild cherry").
153. .ʃj (in Kas. *čabre*, "much").
154. ˌsj (in Pol. *sia*C', "to sow").
155. ˌs*w* (in Abasian *aC'a*, "apple").
156. .ˌs w (in Ab. *ac'*, "ox").
*Sc.* 157. ˌz (in Ital. *lo zelo*).
158. ˌz ˌz (in Ital. *rozzo*).
159. ˌzj (in Pol. *jedz'*, "go").
160. ˌz*w* (in Ab. *az'y*, "some one").

*Alveolars.*

*He.* 161. ˌt (in Fr. *tas*).
162. ˌtj[3] (in Kas. *t'ai*, "colt").
163. ˌt ˌt (in Ital. *matto*).
164. t⌊h (in Dan. *til*, "to").
165. t„h (in Kas. *ja't'olṣa*, "red").

[1] Nasal-continuous. [2] Soft-liquid.
[3] Hard-liquid.

166. ˌtˌh (in Thush *t'uix*, "salt").
167. ˌtj (in Russ. *poot'*, "way").
168. ˌtw (in Fr. *toi*).
169. ˌtwj (in Fr. *étui*).
170. ˌd (in Fr. *doux*).
171. ˌdj (in Kas. *dòxlu*, "freshness").
172. ˌdˌd (in Ital. *Iddio*).
173. 'd (in Saxon).
174. ˌdj (in Russ. *loshad'*, "horse").
175. ˌdw (in Fr. *doigt*).
176. ˌdwj (in Fr. *conduire*).
177. ˌn (in Fr. *nain*).
178. ˌnj (in Kas. *n'ak*, "blue").
179. ˌnˌn (in Ital. *canna*, "reed").
180. dˌ (in Irish *bean*, "woman").
181. ˌnj (in Russ. *lèn'*, "tench").
182. ˌnw (in Fr. *noix*).
183. ˌnwj (in Fr. *nuit*).
184. s (in Eng. *so*).
185. ss (in Ital. *cassa*).
186. sjsj (in Kas. *ş'ât*, "hour").
187. sH (= the Arab. ص).
188. sj (in Pol. *kos'*, "mow").
189. sw (in Fr. *soie*).
190. swj (in Fr. *suie*).
191. z (in Eng. *zeal*).
192. zz (in Hungarian *azzal*, "with the").
193. .z (in Ab. *zaqa*, "how much").
194. zj (in Pol. *lez'*, "go up").
195. zw (in Fr. *rasoir*).
196. zwj (in Fr. *dix-huit*).
197. zhˌ (not found).
198. lwh (not found).
199. ˌl (in Fr. *lait*).
200. lj (in Kas. *l'ap*, "shine").
201. ˌlˌl (in Ital. *stella*).
202. ˌlj (in Russ. "king").
203. ˌlw (in Fr. *loi*).
204. ˌlwj (in Fr. *lui*).
205. ˌr (in Span. *rey*).

*Whishes* (*Chuintantes*).

206. sh (in Eng. *she*).
207. shj (in Kas. *ş'arabuču* [ʃ'], "fellow-countryman").
208. shsh (in Ital. *pesce*).
209. shjshj (in Kas. *ş'oldi*, "green").
210. .sh (in Ab. *aša*, "rope").
211. shj (in Russ. *vosh'*, "louse").
212. shw (in Fr. *choix*).
213. shwj (in Fr. *chuinter*).
214. shwshw (in Ab. *aş'*, "plane-tree").
215. .shw (in Ab. *aş'*, "door").
216. zh (in Eng. *pleasure*).
217. zhzh (in Hung. *a'zseb*, "the pocket").
218. .zh (in Ab. *aža*, "hare").
219. zhj (in Basque [Soule] *jin*, "come").
220. zhw (in Fr. *joie*).
221. zhwzhw (in Ab. *aẑ'*, "cow").
222. .zhw (in Ab. *ẑ'aba*, "ten").
223. zhwj (in Fr. *juin*).

*Ht.* 224. rsh (in Polish *przez*, "through").
*St.* 225. rzh (not found).

*Palatal Whishes.*

*Hc.* 226. ˌsh (in Ital. *pece*).
227. ˌshˌsh (in Ital. *caccia*).
228. .ˌsh (in Ab. *ača*, "quail").
229. ʃhʃh (in Ab. *aʃ̌'y*, "mouth").
230. .ʃh (in Ab. *aʃ̌'y*, "horse").
231. .ʃhj (in Kas. *č'an*, "early").
232. ˌshj (in Russ. *noch'*, "night").
233. ˌsh*w* (in Louisiana Creole *choui*, "to cook").
234. ˌsh*w*j (in Trinidad Creole *chouite*, "to cook").
*Sc.* 235. ˌzh (in Ital. *regio*).
236. ˌzhˌzh (in Ital. *maggio*).
237. ˌzhj (in Basque [Soule] *espundja*, "sponge").
238. ˌzh*w*j (in Louisiana Creole *néjuí*, "needle").

*Double Palatals.*

*Hc.* 239. ʇs (in Basque *otso*, "wolf").

*Palatals.*

*Hc.* 240. t (in Eng. *tea*).
241. ˌt (in Dan. *huset*, "the house").
242. Jh (in Eng. *hue*).
243. tj (in Hung. *tyúk*, "hen").
244. tjtj (in Hung. *a' tyúk*, "the hen").
*Se.* 245. d (in Eng. *do*).
246. dd (in Sardinian *beddu*, "beautiful").
247. ˌd (in Span. *lado*).
248. ˌdˌd (in Jutland *Gud*, "God").
249. J (in Eng. *yet*).
250. JJ (in Hung. *ejjel* "night").
251. dj (in Hung. *gyöngy*, "pearl").
252. djdj (in Hung. *a' gyöngy*, "the pearl").
*Ne.* 253. n (in Eng. *no*).
254. nh (in Eng. *tent*).
255. Jˌ (in Basque [Roncal] *azkoỹa*, "badger").
256. nj (in Fr. *digne*).
257. njnj (in Hung. *a' nyul*, "the hare").
258. njh (not found).
*Hc.* 259. ˌs (in Sp. Basque *su*, "fire").
*Sc.* 260. ˌz (in Port. *zagal*, "young shepherd").
*Hl.* 261. lh (in Eng. *felt*).
262. ljh (in Saintongeais *glas*, "knell").
*Sl.* 263. l (in Eng. *low*).
264. lj (in Ital. *figlio*).
265. ljlj (in Hung. *melly*, "which").
*Ht.* 266. ɛʰ (not found).
267. *h* (= Arab. ح).
268. *hj* (in Kas. *ḥ'oiu*, "orphan").
269. *hjhj* (in Kas. *ḥ'i*, "pigeon").
270. rH (in Kas. *ḥ'aba*, "fish").
*St.* 271. r (in Eng. "*ray*").

272. rr (in Ital. *terra*).
273. ɛ (= Arab. ع).
274. rj (in Lusatian *wuhor'*, "eel").
275. r*w* (in Fr. *roi*).
276. r*w*j (in Fr. *bruit*).

*Ultra-Palatals.*

The whole of this set of letters comes originally from Lepsius's Alphabet, and "must be considered, therefore, very doubtful."

*He.* 277. T (in Sansk.).
*Se.* 278. D (in Sansk.).
*Ne.* 279. N (in Sansk.).
280. Nh (in Dravidian).
*Hc.* 281. *s*h (in Sansk.).
282. Thh (in Drav.).
*Sc.* 283. *s*h (theoretical).
284. Dhh (in Drav.).
*Hl.* 285. Lh (in Drav.).
*Sl.* 286. L (in Sansk.).
*Ht.* 287. Rh (theoretical).
*Sl.* 288. R (in Sansk.).
289. Rhh (in Drav.).

*Gutturo-Labials.*

*He.* 290. *p̓* (in Peruvian).
291. wjh (in Ab. *ih'y*, "speak").
*Se.* 292. *b* (not found).
293. wj (in Fr. *huile*).
*Hc.* 294. fh (not found).
*Sc.* 295. vh (not found).

*Gutturo-Dentals.*

*Hc.* 296. *t*h (in Surgut Ostiak *kat'*, "day").
297. *t*h*t*h (in S. Ost. *wat'-t'ak*, "without").
298. *t*hj (in Low S. Ost. *sit'a*, "gunpowder").
299. *t*hj*t*hj (not found).
*Sc.* 300. *d*h (in S. Ost. *âd'an*, "morning").
301. *d*h*d*h (in S. Ost. *wad-d'ax*, "without").
302. *d*hj (in High S. Ost. *sid'a*, "gunpowder").
303. *d*hj*d*hj (not found).

*Guttural Whishes.*

*Hc.* 304. „sh (in Tempiese Sardinian *la chjai*, "the key").
305. „sh„sh (in Temp. Sard. *vecchju*, "old").
306. „sh*w*j (in Picard *kyuir*, "leather").
*Sc.* 307. „zh*w*j (in Temp. Sard. *la ghjesgia*, "the church").
308. „zh*w*j „zh*w*j (in Temp Sard. *ogghji*, "today").

*Gutturo-Palatals.*

*He.* 309. *t* (= Arab. ط).
310. tj (in Basque [Labourd] *ttorttoil*, "turtle-dove").
*Se.* 311. *d* (= Arab. ض).
312. *d*j (in Basque [Labourd] *yaun*, "lord").
*Ne.* 313. *n* (not found).
*Hc.* 314. *ʃ* (not found).
315. *s* (in Basque [Labourd] *su* "fire").

*Sc.* 316. ˌs (not found).
317. s (in Basque[Labourd] *Jesus*).

*Double Guttural.*

*Hc.* 318. ˌkh (in Gaelic *mac*, "son").

*Gutturals.*

*He.* 319. k (in Eng. *key*).
320. kj (in Kas. *k'orn*, "nest").
321. kk (in Ital. *bocca*).
322. kḫ (in Upper Germ. *komm*).
323. kjḫ (in Kas. *k''ala*, "white").
324. ḫkḫ (in Thush *k'ok*, "foot").
325. Hh (in Germ. *hand*).
326. HhHh (in Hung. *ahhoz*, "thereto").
327. H (in Eng. *hand*).
328. ; (= Arab. *hemza*).
329. kj (in Ital. *la chiave*).
330. kjkj (in Ital. *occhio*).
331. Hhj (in Florentine Ital. *la chiave*).
332. k*w* (in Fr. *quoi*).
333. H*w*h (an ordinary whistle).
334. H*w* (a voiced whistle).
335. k*w*j (in Fr. *biscuit*).

*Se.* 336. g (in Eng. *go*).
337. gg (in Ital. *veggo*).
338. 'g (in Ostiak *argem*, "I sing").
339. H'*w* (in Span. *huevo*).
340. gj (in Ital. *la ghianda*).
341. gjgj (in Ital. *ragghiare*).
342. g*w* (in Fr. *goître*).
343. g*w*j (in Fr. *aiguille*).

*Ne.* 344. q (in Eng. *singer*).
345. qh (in Eng. *sink*).
346. H'h, (in Scutari Albanian *halk*, "multitude").
347. qj or qȷ (in Sanskr.)

*Hc.* 348. kh (in Germ. *dach*).
349. x (existence doubtful).
350. khkh (in Sassarese Sard. *palchi*, "because").
351. khjkhj (in Kas. *x'ol*, "ṣhade").
352. khH (not found).
353. kjh (in Germ. *milch*).
354. k*w*h (in Scotch *loch*).

*Sc.* 355. gh (in Germ. *tage*).
356. *x* (existence doubtful).
357. ghgh (in Sass. Sard. *olganu*, "organ").
358. .gh (existence doubtful).
359. gjh (in Germ. *selig*).
360. g*w*h (in Germ. *augt*).

*Nc.* 361. gh,h (in Avar *xonkodize* [x̌] "to snore").

*Hl.* 362. *l*h (not found).
363. lhh (in Welsh *llaw*, "hand").
364. lhhj (not found).
365. *l*wh (not found).

*Sl.* 366. *l* (in Pol. *ɫamac*, "to break").
367. *l*hh (theoretical voiced Welsh *ll*).
368. *l*hhj (not found).
369. *lw* (not found).

*Hl.* 370. krh (= Arab. ḫ).
371. .rh (not found).

*l.* 372. grh (= Arab. ġ).
373. .r (= Newcastle "burr").
374. ⌊r (in Jutland *var*, "was").
375. *r* (in Parisian *Paris*).
376. *rr* (in Parisian *irregulier*).

*Ultra-Gutturals.*

*le.* 377. K (= Arab. ʒ).
378. KJ (in Kas. *q'apa*, "hat").

*Sc.* 379. G (not found).
380. G*w* (not found).
*Ne.* 381. Q (not found).
*Hc.* 382. *k*h (in Dutch *nacht*).
383. *k*hJ (in Kas. *ɣ'ort*, "pear").
384. .*k*h (in Kas. *ɣ'ata*, "house").
385. K*w*h (not found).
*Sc.* 386. Gh (in Dutch *God*).
387. G*w*h (not found).
*Ht.* 388. ꞱH (not found).
*St.* 389. ꞱI (in Dan. *ret*, "right").
390. ꞱI (in Dan. *var*, "was").

J denotes palatalized or *mouillées* characters, *w* labialized or *veloutées* characters, *w*j labio-palatalized or *mixtes* characters, ⌊ a weakened consonant, a doubled letter or group of letters an emphasized consonant, a prefixed . a semi-emphasized consonant, prefixed ˌ an alveolarized or dentalized or "advanced" consonant, a prefixed ˏ a "retracted" consonant, and ʲ a semi-palatalized or semi-mouillée consonant.[1]

## MR. SWEET'S NARROW ROMIC ALPHABET AND LIST OF SYMBOLS.[2]

1. a (in *father*).
2. ɐ (in *bat*).
3. *a* (broad a).
4. *ɒ* (broad ɐ).
5. ʕ A / ʔ V (varieties of ɐ).
6. æ (in *men*).
7. *ɔe* (in *man*).
8. æh (in *turn*).
9. *ɔe*h (in *opener*).
10. b (in *bee*).
11. bh (German w).

[1] For Mr. Ellis's own Palæotype Alphabet, see "Early English Pronunciation," part i. pp. 3-12, where also a list of signs denoting clicks, pitch, whisper, glide, &c., is given.

[2] In "A Handbook of Phonetics," pp. xv-xvii.

12. bh*j* (palatalized bh).
13. d (in *day*).
14. dh (in *then*).
15. dh*j* (palatalized dh).
16. D (palatal d).
17. e (close e).
18. ə (French close eu).
19. *e* (variety of open e).
20. *ɐ* (variety of French open eu).
21. { eh / eh (German unaccented e).
22. f (in *fee*).
23. g (in *go*).
24. gh (voiced kh).
25. gh*r* (trilled gh).
26. gh*w* (labialized gh).
27. { g*j* / G (palatalized g).
28. h (general diacritic).
29. H (aspirate).
30. Hh (open glottis).
31. i (narrow i).
32. *i* (wide i).
33. ih (Welsh u).
34. *i*h (wide ih).
35. j (in *you*).
36. jh (voiceless j).
37. jh*w* (labialized jh).
38. kh (Scotch ch).
39. kh*r* (trilled kh).
40. kh*w* (labialized kh).
41. kH (aspirated k).
42. { k*j* / K (palatalized k).
43. l (in *lee*).
44. lh (voiceless l).
45. L (palatal l).
46. ɭ (guttural l).
47. m (in *may*).
48. mh (voiceless m).
49. n (in *now*).
50. nh (voiceless n).
51. *n* (nasality).
52. N (palatal n).
53. o (close o).
54. *o* (open o).
55. oh (between o and ə).
56. *o*h (between *o* and *ɐ*).
57. ɔ (open o in *all*).
58. ɔh (between ɔ and œ).
59. ɔ (open o in *not*).
60. ɔh (between *ɐ* and *æ*).
61. œ (open French eu).
62. *æ* (wide œ).
63. p (in *pay*).
64. ph (voiceless bh).
65. ph*j* (palatalized ph).
66. pH (aspirated p).
67. q (in *sing*).
68. qh (voiceless q).
69. *q* (French nasality).
70. r (in *red*).
71. *r* (trilled letter).
72. r*r* (trilled r).
73. rh (voiceless r).
74. rh*r* (trilled rh).
75. r*j* (palatalized r).
76. R (laryngal r).
77. Rh (voiceless R).
78. s (in *say*).
79. s*j* (palatalized s).
80. sh (in *fish*).
81. sh*j* (palatalized sh).
82. sh*w* (labialized sh).
83. t (in *tea*).
84. th (in *thing*).
85. th*j* (palatalized th).
86. tH (aspirated t).
87. T (palatal t).
88. u (narrow u).
89. uh (Swedish u).

ᶜ(English u).
ᵢ (wide uh).
ᶦ(in *vie*).
ᶠdenotes voice).
ʰh
ᴬ (whisper).
(in *we*).
ᵎ (in *why*).
(labialization).
ˀglottal catch).
(French u).
ʸwide y).
ʲin *zeal*).
(in *rouge*).
)ː (denotes length).
ːː (extra length).
(stress or force).
ˈˈ (extra stress).
(half stress).
$\overset{=}{a}$ (level force).
$\overset{<}{a}$ (increasing force).

110. $\left\{\begin{matrix}>\\a\end{matrix}\right.$ (diminishing force).
111. — (level tone).
112. / (rising tone).
113. \ (falling tone).
114. ᵛ (falling and rising tone).
115. ᴧ (rising and falling tone).
116. [i] (glide).
117. ʿz (whispered s).
118. aˌ (inner or away from the teeth).
119. aˏ (outer).
120. rˈ (protruded).
121. rˌ (inverted or cerebral).
122. * (denotes simultaneity of two sounds it comes between).
123. $e^{ı}$ (raised tongue).
124. $o^{ı}$ (narrowed lip-opening).
125. — (beginning of sound-group on weak stress).

# CHAPTER V.

## THE MORPHOLOGY OF SPEECH.

"In der Wirklichkeit wird die Rede nicht aus ihr vorangegangenen Wörtern zusammengesetzt, sondern die Wörter gehen umgekehrt aus dem ganzen der Rede hervor."—W. VON HUMBOLDT.

"Rien n'autorise donc à admettre deux moments dans la création du langage: un premier moment, où il n'aurait eu que des radicaux, à la manière chinoise, et un second moment, où il serait arrivé à la grammaire."—RENAN.

WE have seen in an earlier chapter that the form under which our thought may express itself in language is capable of many variations. The minds of men and races are very various, and what may seem a perfectly natural mode of thought and expression to one man may be wholly strange and unnatural to another. It is as difficult for us to realize the conception of the sentence formed by the Chinaman, as it is for the Chinaman to realize ours. The world wears a different aspect to different individuals, and the relation of the speaker to the things about him may be regarded in widely different ways. Races start each with a peculiar temperament and peculiar characteristics; indeed, it is just these peculiarities that constitute what we call a race. And race peculiarities become strengthened by time and tradition, by the continuous influence of the circumstances which have at once created and fostered them. What may

have been only a tendency in the beginning becomes in the end a settled and permanent feature; the germ develops into the full-grown organism, and in the course of ages makes explicit all the possibilities that lie implicit within it. The manifold races of mankind do not all think in the same manner, and the divergent modes in which they think are reflected in the languages they utter.

Hence it is that languages can be classed morphologically, that is, according to the form assumed by the sentence. Here the sentence may be built, as it were, around a verb, there any conception of a verb may be absent; here its several parts may be regarded as so many equipollent monads, set one against the other, there as interdependent pieces of a Chinese puzzle which all fit into their appropriate places. In one class of tongues the root may be monosyllabic, in another polysyllabic; one language may interpose the stem between the root and the grammatical suffix, another may know nothing of such an intermediary. Morphologically, therefore, languages differ from each other in the structure of the sentence and the grammatical relation of its parts.

Now we must not forget that the idea of race has not the same signification for the glottologist that it has for the physiologist. For the student of language it means an assemblage of psychological and physiological peculiarities which are expressed in articulate speech. For him the European Jew, who has no language but that of the country in which he is settled, is a member of the European race; only the Jew whose mother-tongue belongs to the Semitic stock can be reckoned a Semite. At the outset, no doubt, race meant the same thing in both a

glottological and a physiological sense. The characteristics which reflected themselves in language were characteristics of which the physiologist has to take account. But the physiological races of the modern world are far more mixed than the languages they speak; the physiologist has much more difficulty in distinguishing his races than has the glottologist in distinguishing his families of speech.

But, as elsewhere in nature, so, too, in the domain of language, species passes gradually and insensibly into species, class into class. The types remain clear and strongly-marked, but the dividing lines between them are hard to draw. Around each type is grouped a large assemblage of languages which stand at a perpetually widening distance from it; on the one side the furthest member of the group almost loses itself in the outlying member of another, while the most distant member on the other side can with difficulty be distinguished from the most distant member of a third group. Isolating Chinese presents the phænomena of agglutination and even of inflection; the agglutinative Finnic dialects approach so nearly to inflection that attempts have been made to include them in the Aryan family; and English is in many respects highly agglutinative and even polysynthetic, while the French *je vous donne* is almost as good an instance of incorporation as could be given from Basque itself. But with all this gradual approximation the several types of language still remain fixed and distinct. The Chinese in its main features, in its bone and muscle, so to say, continues true to its isolating type, just as Finnic continues true to its agglutinative type, or

French to its inflectional one. The greater or less departure of a language from its primitive type is due to several causes. First of all, race in language may become mixed just as much as race in physiology. Contact between two languages produces not only mixture in their vocabularies, but a mutual influence upon their phonology, and even grammar as well. This is a point to which we shall have to return hereafter. Few languages any more than races in the physiological sense can have remained quite isolated during the long course of their history or been preserved from contact with languages of an alien class. Then, secondly, with all their differences the minds of most men are cast in the same mould. Thought is one, as a philosopher has said, though the forms under which it shows itself are infinitely various. Unity underlies diversity, and this unity finds its expression in the tendency of all languages to break away from their types and assume common forms. It is true that a language cannot wholly break away from its type without becoming another language, and so ceasing to exist; it is true, also, that such a psychological change as would be implied by the occurrence is almost inconceivable, and is certainly contrary to historical experience; but nevertheless languages belonging to two different types may gradually approach one another during the long ages of their development, and the difficulty experienced by the student in deciding to which type they belong may testify to the similarity of the intellectual outfit of all mankind. Here, at any rate, we can discover a common origin, a common descent for the manifold branches of the human family.

Schlegel's attempt to divide languages morphologically has already been described. He distinguished them primarily as inorganic and organic, the first class including languages "with grammatical structure," like the Chinese or languages with affixes, and the second class, including the synthetic or ancient and analytic or modern dialects of the inflectional tongues. Pott, following Wilhelm von Humboldt, established the division which with various modifications is still upheld by most linguistic students. According to this the languages of the world fall into four groups, the polysynthetic (such as the Eskimaux or the Mexican), the isolating (like the Chinese), the agglutinative (like the Turkish), and the inflectional (like Sanskrit). The first group he terms transnormal, the second two intra-normal, and the third alone normal. Bopp falls back upon Schlegel's classification, making but three kinds of speech, the isolating with monosyllabic roots but "without organism, without grammar;" the languages capable of composition, of which the Indo-European form the highest type; and the Semitic languages which denote the relations of grammar by internal vowel-change. Schleicher, like Max Müller, discards the first or polysynthetic class of Humboldt and Pott, while Max Müller acutely seeks historical support for the threefold division by referring the isolating languages to races which have not risen above family-life, the agglutinative to nomad tribes, and the inflectional to peoples who have arrived at the conception of the state.

All these divisions, so far as they are founded in fact, are really based, not on the word, but on the sentence,

and only have a meaning if we explain them as representing the different forms under which the sentence has been conceived by the various races of mankind. To speak of Chinese being "without grammar," as Bopp does, or to describe the larger number of languages as inorganic or other than normal, like Schlegel and Pott, is simply self-contradictory. Every morphological classification of language must be founded on grammar—that is, on the relations of the several parts of the sentence to one another; and the very existence of a class implies that it has a grammar and an organic life. We shall never have a satisfactory starting-point for our classification unless we put both word and root out of sight, and confine ourselves to the sentence or proposition, and the ways in which the sentence may be expressed. The reason why languages differ morphologically is that the thought which they embody assumes different forms.

In the second chapter (pp. 122-132) the languages of the world have been classed as (1) polysynthetic, (2) isolating, (3) incorporating, (4) agglutinative, (5) inflectional, and (6) analytic, and reason shown from the structure of the sentence why such a classification should be made. Steinthal was the first to make the sentence rather than the word the basis of morphological arrangement, and to point out that where we are dealing with grammar and structure, we must have at least two words standing in grammatical relation to each other. Steinthal's system is very elaborate. He begins with the division of language into formless and formal, a division, however, of very questionable accuracy. It seems to take us back to the scheme of Schlegel, and to forget that where lan-

guages are distinguished from one another by the forms they assume, we cannot describe any of them as having no form at all. The form of speech, indeed, is the mode in which the mind views the connection between the several parts of a proposition, so that wherever we have a proposition, wherever, in fact, we have language, there must be form. Steinthal, however, goes on to divide his formless languages into "juxta-positive" and "compositive," the Taic languages belonging to the first, and the Polynesian, Ural-Altaic, and American belonging to the second. The formal languages are similarly divided into "juxta-positive" and "compositive," Chinese coming under the head of the one and Old Egyptian, Semitic, and Aryan coming under that of the other.

Humboldt did better than Steinthal in using the terms "imperfect" and "perfect," instead of "formless" and "formal." Like Steinthal, he classed Chinese along with the inflectional languages of Europe, rather than with Burman and the other isolating idioms of the far East. This seems most unnatural, since—so far as outward form is concerned—little difference can be made between isolating Chinese and isolating Burman. It is true that the order in which the parts of the sentence follow one another is more or less free in Chinese, while it is fixed in Burman, but this is a difference essentially unlike that between inflectional Aryan with its suffixes and inflectional Semitic with its internal vowel-change. Besides, both Aryan and Semitic are included in the same class. But both Humboldt and Steinthal found themselves in a difficulty. Starting with the assumption that all language follows a regular course of development,

ascending from the isolating stage to the inflectional, they had further to assume that this development was but a reflection of the general development of the mind, and that the passage from one stage of speech to the other was marked by a passage to a higher intelligence and a higher form of civilization. How, then, could it be possible that the Chinese nation, which seems to have originated a considerable civilization, should show no signs of that civilization in its language, the mirror and reflection of the spirit of man? How could it be that the language spoken by the primitive Aryans, when they were still simple shepherds on the Hindu-Kush, before they had learnt the elements of writing and culture from their Semitic neighbours, was so much in advance of that of a race to whom belonged the hard task of initiating a civilization? The only escape from the difficulty was to deny that Chinese should be classed with Burman, in spite of appearances, and so to throw the whole system of classification into confusion.

For that system depends upon the mode in which the grammatical relations of the sentence are expressed, and so long as the mode is the same, the order followed by the several parts of the sentence matters but little. The order of words, in fact, is constantly liable to change, and the simple fact that the definite article is postfixed in Scandinavian, Albanian, Bulgarian, and Wallachian, while it is prefixed in those other members of the Aryan family which possess one, shows how impossible it is to ground any important conclusions upon it. The same language varies from age to age in the position it assigns to the words it uses. The modern *moreover*, for example

appears as *overmore* in the Paston letters, and the Coptic, once a postfix language, has now become a prefix one. As we shall see presently, the order assumed by the parts of the sentence depends in great measure upon the development of grammatical forms.

Humboldt and Steinthal, nevertheless, are quite right in believing that there is a distinction between Chinese and Burman, but the distinction is that between a decrepit and civilized language on the one hand and a fresh and uncultivated language on the other. Chinese civilization is immensely old, and the language which enshrines it is immensely old also; but we must be on our guard against supposing that the antiquity of Chinese is proved by its isolating character. Chinese is no example of arrested growth, no fossilized relic of an earlier condition of speech. Were it so, Chinese civilization, and the originality and progress it implies, would be inexplicable. When we compare classical Chinese with Burman or Siamese, or even with the less cultivated dialects of the Chinese empire itself, we find the progress and development we should expect; but it is progress and development within the limits of "isolation." All the possibilities of the isolating sentence have been worked out; and if these possibilities are not so numerous or so adequate as in the case of an agglutinative or inflectional sentence, the fault is due to the original conception of the sentence with which the Chinese started, not to fossilization or arrested growth. The Mandarin dialect of China has been affected by phonetic decay to an enormous extent; numerous sounds have perished, and words once dissimilar have become

identical in pronunciation. By the help of the ancient rhymes, of the cognate dialects, and of a scientific examination of the written characters, Dr. Edkins has been able to restore the pronunciation of Chinese as it was two thousand and more years ago, and the evidences thus obtained of the wear and tear of the speech are most striking. *Dak*, "the flute," for instance, has become *yo*; *zhet*, "the tongue," is now *she*, and the table of correspondent sounds given in the foot-note will show how great has been the changes undergone by the outward form of the cultivated language.[1] Side by side with this decay of sounds went a corresponding grammatical development. Tones were introduced to distinguish words that had come to be pronounced alike, and the different parts of the sentence were marked out by "empty words," used like our "of" or "if" in a purely symbolical and grammatical sense. It is probable that the spread of education and the extensive employment of ideographic writing had much to do with the phonetic decay that attacked the language. Ambiguities in conversation could always be remedied by an appeal to written symbols. At all events, it is curious that Accadian was almost equally affected by phonetic decay; and Accadian not only possessed a similarly ideographic system of writing, but was spoken in a country where education

[1]

| Old Chinese. | Mandarin. | Old Middle Dialect. | Hakka Dialect. | South Fukien. | Canton. |
|---|---|---|---|---|---|
| g | c'h, k' (h) | g (dj) | k' | k', k | k' |
| d | t' (l) | d | t' | t', t | t' |
| b | p' (f) | b (v) | p' | p', p (h) | p' |

This table applies only to words which have the fifth tone (Edkins: "Introduction to the Study of the Chinese Characters," p. 185).

was similarly widespread, and clay—the ordinary writing material—was always at hand.

We are apt to assume that inflectional languages are more highly advanced than agglutinative ones, and agglutinative languages than isolating ones, and hence that isolation is the lowest stage of the three, at the top of which stands flection. But what we really mean when we say that one language is more advanced than another, is that it is better adapted to express thought, and that the thought to be expressed is itself better. Now, it is a grave question whether from this point of view the three classes of language can really be set the one against the other. So long as thought is expressed clearly and intelligibly, it does not much matter how it is expressed—how, that is, the relations of the sentence or proposition are denoted. When we begin to contrast the morphology of two classes of speech, there is a tendency to import our prejudices into the question, and to assume that the grammatical forms to which we have been accustomed are necessarily superior to those which appear strange to us. The masterpieces of Greek, or Latin, or Sanskrit literature have produced the impression that the languages which embody them must surpass all others as instruments of thought. But such an impression may, after all, be an incorrect one. English literature stands on quite as high a level as the literature of the classical tongues. The English language is quite as good an instrument of thought as Sanskrit or Greek, and yet English can hardly be said to be inflectional in the way that Sanskrit and Greek are. If we turn to China we shall find the Chinaman preferring his own classics to any-

thing produced by the West, and regarding his own language as the best possible instrument of thought. Preferences of this kind can as little be referred to an absolute standard as preferences in the matter of personal beauty. The European, for instance, has a wholly different ideal of beauty from the Negro, and the Negro from the Mongol. If the excellence of a language is to be decided by the number and variety of its grammatical forms, the palm will be borne off rather by the Eskimaux or the Cheroki than by the dialects of Greece and Rome; if by the attainment of terseness and vividness, Chinese will come to the front; if by clearness and perspicacity, English will dispute the prize with the agglutinative languages. Indeed, the agglutinative languages are in advance of the inflectional in one important point, that, namely, of analyzing the sentence into its component parts, and distinguishing the relations of grammar one from another. It has been remarked[1] that "were the development theory true, the inflectional would have developed into the agglutinative, and not the converse." Thought is obscured, not assisted, by the existence of different terminations to express the same grammatical relation, or of the same termination to express different grammatical relations; and yet this is an anomaly and source of confusion which continually meets us in the inflectional tongues. The ascription of gender to inanimate objects is worthy only of a savage and unreasoning age, and where the signs of gender have lost all reference to their original import, as in modern Ger-

[1] Sayce: "Principles of Comparative Philology," Preface to 2nd edition, p. ix.

man, they become merely a relic and survival of barbarism. In fact, when we examine closely the principle upon which flection rests, we shall find that it implies an inferior logical faculty to that implied by agglutination. In a flectional language the relations of the sentence are denoted by particular suffixes or internal vowel-changes, which group themselves, as it were, round the principal thought contained in the sentence. In other words, every subordinate thought should be denoted by a flection. Such a principle, however, cannot be worked. *Amabit*, it is true, means "he will love;" but in order to express "he must love," language has to break through its flectional principle and denote the idea, not by flection, but by independent words—*necesse est ut amet*, or *illi amandum est*. But this is not the only mode in which the principle of flection is violated by the necessities of developed speech. When sentences come to be brought into relation with one another, the subordinate sentence ought to be pointed out by flectional means. This is done in some cases, as in the Greek use of the inflected article with the infinitive. Generally, however, the subordination is left to be marked by independent words, such as the conjunctions, by the very means, in fact, adopted by Chinese and other isolating languages in accordance with their fundamental principle. In fact, the principle of flection cannot be logically carried out beyond the narrow circle of those simple sentences which sufficed for the needs and intelligence of primitive man, and the progress of thought in modern Europe has been marked by a corresponding revolt from the trammels of flection. It is only dialects like those of Slavs and

Lithuanians which still cling to an elaborate system of flection. English has fitted itself to become a universal language by struggling to assimilate its condition to that of Chinese. Even the polysynthetic languages of America can, with a certain show of reason, claim a higher place for themselves than inflectional speech. If the object of language is to express thought, it is obvious that that thought should be expressed as a whole, as in a picture; and this is just what is done by a polysynthetic sentence. Our own language, when it forms such compound epithets as "The Employers' Liability for Injury Bill," or German when it interpolates a whole sentence between the article and its substantive, virtually adopt the principle of polysynthetism. Polysynthetism, however, is only to be preferred when we wish to represent our thought as a single whole, to bring it before the mind of another just as it presents itself to our own mind. The best test we really have of a growth in intelligence and reasoning power is an increasing clearness and analysis of thought. The polysynthetic languages are essentially the languages of races whose logical faculties are backward, or who have not yet left behind them the "jelly-fish" stage of development.[1] Division of labour, differentiated organization, analysis of thought and its expression—all these are the signs of advancing civilization.

The whole picture is imaged in the mind before we break it up into its several parts. So, too, the sentence which embodied a thought was conceived as a whole before it was separated into its elements. Gestures were

[1] See "Contemporary Review," April, 1876.

the first makeshift for grammar; they determined the relations of each particular utterance. Then these utterances came to be compared together, and those that agreed were put on one side, and those that disagreed on another. By slow degrees the relations of grammar were thus evolved; gestures became more and more unnecessary, until at last in the most highly cultivated languages, such as modern English, they have disappeared almost entirely or been banished from educated speech. But this primitive monad, this undifferentiated sentence-word, developed very variously in the mouths of different speakers. In one case a number of antecedent circumstances combined to produce a certain conception of the outer world and the relation of things to each other and to the mind, altogether unlike the conception which grew up in other cases. Here the Chinaman regarded the elements of the sentence as co-ordinate and equal, setting part against part, and member against member, and leaving the relations between them to be supplied by the mind. There the Mongol drew a hard and fast distinction between the principal and the subordinate, between the nucleus of the proposition and the ideas dependent on it, but he took care to express each by a corresponding word and to place these words in the exact relation demanded by the thought. Elsewhere, again, the Hindu merged the subordinate in the principal, expressing the relations of the several parts of the sentence by modifications of the individual words or imitating the original form of speech by a long and elaborate compound. But in all cases the developed sentence of the later period would seem to have been evolved out of the primitive

undifferentiated one according to the genius of the speakers and the mode in which they conceived the relations of ideas. The American tongues alone preserved a semblance of the form once assumed by all speech, and in the compounds of the inflected idioms we may also trace a reflection of the earliest utterances of man. What these were may still be gathered from the grammar of the Eskimaux, even though there is as great a gap between this and the primæval sentence-words of his forefathers as there is between the social condition of the Eskimaux and the social condition of his first ancestors. A cultured language like the Mexican shows the highest development attainable by the polysynthetic form of speech; here words may be isolated and separated from the sentence by means of the affix *tl*. *Sotsitl*, for instance, is "flowers," *ni-sotsi-temoa*, "I look for flowers." All over the world, indeed, wherever we come across a savage race, or an individual who has been unaffected by the civilization surrounding him, we find the primitive inability to separate the particular from the universal by isolating the individual word, and extracting it, as it were, from the ideas habitually associated with it. Thus the Hottentot cannot use a noun without a pronominal suffix indicating not only gender and case but also person as well, except as a predicate;[1] in several of the South American dialects the words which denote "head," "body," "eye," or other parts of the person, cannot be named without personal relation being denoted by a prefixed possessive pronoun or denied by a negative or privative

[1] Fr. Müller: "Grundriss der Sprachwissenschaft," i. 2, p. 2.

prefix,[1] and in Mr. Wallace's vocabularies from the river Uapes this inability extends to other words. A Kurd of the Zaza tribe who furnished Dr. Sandwith with a list of words belonging to his dialect, was so little "able to conceive a *hand* or *father*, except so far as they were related to himself, or something else, and so essentially concrete rather than abstract were his notions, that he combined the pronoun with the substantive whenever he had a part of the human body or a degree of consanguinity to name," saying *sèrè-min*, "my head," and *pie-min*, "my father." Dr. Latham, from whom this fact is quoted, goes on to refer to a similar amalgamation noticed by him in the languages of the Louisiade and mentioned in the appendix to Macgillivray's "Voyage of the Rattlesnake," as well as in the ordinary Gipsy dialect spoken in England.[2]

A morphological review of the languages of the world reveals one curious and significant fact. Particular types of language belong to particular localities. In other words, a morphological classification of speech is also a geographical one. The polysynthetic idioms are characteristic of America, the isolating dialects of the extreme east of Asia. So, too, the leading inflectional families of speech, the Aryan and the Semitic, have both proceeded, it would seem, from Western Asia, like the Alarodian family, also inflectional, and best represented by the modern Georgian. The prefix-pronominal languages are confined to Southern Africa, as the incorporating Basque to the Pyrenees and

[1] Sayce: "Principles of Comparative Philology" (2nd edition), p. 229.

[2] "Transactions of the Philological Society" (1856), pp. 40, 41.

the verbless Malayo-Polynesian to the islands of the Pacific. This fact would go to show that the distant emigration of languages, like the distant emigration of races, is very exceptional and chiefly characteristic of the higher species with their greater energy and expansiveness. The wanderings of savage tribes are circumscribed by the climatic and other conditions to which they are peculiarly subject. Without canoes voyages cannot be taken, and mountains, rivers, deserts, or stronger neighbours are all obstacles to movement more or less insurmountable. The fact would also go to show that it is only within the area peculiar to a certain class of languages that we may look for their progress and development. It is only in Eastern Asia or in America that we can hope to discover the highest development of which an isolating or a polysynthetic language is capable, and so regard Chinese and Mexican not as "arrested growths," but as instinct with the progressive intelligence and cultivated life of the peoples that speak them. Where no traces of a type of speech different from the prevailing one are to be found, we are justified in concluding that it never existed there. And finally the fact will correct that tendency we all have to assume a unity upon insufficient evidence. Types of language, like types of race, are as strongly marked off from one another as the countries to which they belong. Polysynthetism is as much characteristic of America as the hatchet face and red skin of the aboriginal; isolation of Eastern Asia as the yellow skin and oblique eyes of the Chinaman or the Burman. Modern discoveries are gradually producing a conviction that the civilizations of China, of Bablyonia,

and of Egypt were all independent and self-evolved. Such at all events is the case with their modes of writing, the best product of any civilization, and no one can study the character of these three civilizations without perceiving that they are radically distinct. Egypt, when the monuments first cast light upon her some 6,000 years ago, is in the height of her culture and advancement; but she comes before us as a pharos of light in the midst of utter darkness, self-contained and self-sufficient, but surrounded on all sides by tribes and nations even more barbarous than the untaught Negro of to-day. And such as was the civilization, such too was the language; the civilizations of the Nile, of the Euphrates, and of the Hoang-ho, were not more isolated and peculiar than the languages which embodied them. It is difficult for us with our steamers and railways and telegraphs to realize the separation and practical immobility of the ancient world. Geographical barriers cut off tribe from tribe, race from race, language from language, and war instead of peace was the sole means that existed of overcoming them. It is to these barriers, however, that we owe the persistency of racial and linguistic type which we may still note in so many parts of the world. It has often been remarked that the fauna and flora of America take us back to a geological rather than a historical age; the same may also emphatically be said of the American type of speech. The Eskimaux may or may not be the survivor of the man of the reindeer age; his grammar, at all events, is a relic of a bygone era of speech.

The morphology of speech, then, deals with the relation of the parts of the sentence one to another. This

relation is expressed by what we term grammatical forms. Position, it is true, as well as accent, frequently takes the place of grammatical forms, especially in languages like Burman or English, but in this case both position and accent will have to be considered as belonging to the province of morphology. The rule which in Burman makes the first of two substantives a genitive or in English a substantive which follows a transitive verb an accusative is itself a grammatical form. Even in those tongues in which the expression of grammatical relations is fullest and most exact, there is much that can never be expressed by outward means, but only hinted at and understood. "The rudest of men," says Chaignet,[1] "are yet sages; ils s'entendent à demi-mot; ils parlent par *sous-entendus*." "It is," as he goes on to observe, "the gesture, the tone, the connection of the sense or its abrupt breaking off, the undefinable and speaking expression of the face, that supply and complete our thought, marking its relations, or more truly its formal side, its most spiritual element, whereby language raises itself above mere sensation and matter." The structure of a language is determined not only by the general type, isolating, agglutinative, or otherwise, to which it conforms, but also by the mode in which its words are linked together, by the way in which its grammatical forms are used and connected, and by the greater or less extent to which the quickness of the hearer in understanding what is not expressed is called upon. Structurally, Coptic belongs to the inflectional class of tongues, but among these it is distin-

[1] "La Philosophie de la Science du Langage étudiée dans la formation des mots" (1875), p. 83.

guished by its prefixing its grammatical forms instead of affixing them, as was the case with its parent the Old Egyptian.

We must not forget, however, that whether in Coptic or Old Egyptian, or any other language, the grammatical form, the relation to be expressed, the idea to be developed and formulated, lay quite as much in the mere act of prefixing or affixing as in the sounds which were prefixed or affixed. The Sanskrit *ad-mi* means "I eat," not only because it is a compound of a verbal stem or root signifying "eating," and the personal pronoun *mi*, but because the pronoun is attached to the stem in such a way as to convey the conception of the relation intended to exist between the two ideas "eating" and "I." We may therefore lay down that one of the modes adopted by language for denoting the relations of grammar is (1) the attachment of prefixes or affixes which may or may not be significant when used alone. (2) A second is the insertion of what are called infixes, as in Dayak, where from *kan*, "to eat," the stem *k-um-an* comes, or in Malay, where by the side of *ka-kan* and *ma-kan* we have also *k-um-akan*. So, too, in Tagala we find *b-in-atin* for *in-batin*, just as in the secondary conjugations of the Semitic verb, *iphteal*, *iphtael*, *istaphal*, the suffix *ta* is inserted between the first and second consonants of the root instead of being prefixed as elsewhere. No doubt, metathesis aided by analogy was the primary cause of this curious phænomenon, as it is in the Sanskrit *yu-na-j-mi*, "I join," instead of *yuj-na-mi* corresponding with the Greek ζεύγ-νυ-μι. The incorporating and polysynthetic languages are examples of the principle on a large scale. (3) A third

mode of expressing the relations of grammar is by a change of vowel. The vowel may either pass into another or receive a different quantity or accent. Professor Pott refers to the use of *vṛiddhi* in Sanskrit patronymics by way of illustration as well as to change of accent in Greek proper names or vocatives. A difference of vowel which was originally purely phonetic has been adapted to distinguish between singular and plural in the English *man* and *men*, between transitive and intransitive in Greek verbs in *-όω* and *-ίω*. Among the less cultivated languages of the world extended use has been made of this method of indicating the forms of grammar. In Javanese, for instance, *iki* is "this," *ika*, "that," *iku*, "that there;" in Japanese *ko* is "here," *ka*, "there;" in Carib, *ne* is "thou," *ni*, "he;" in Brazilian Botocudo *ati* is "I," *oti*, "thou."[1] In African Tumali *ngi* is "I," *ngo*, "thou," and *ngu*, "her." Even differences of signification may be denoted by the same means; the Carib *baba*, "father," is contrasted with *bibi*, "mother," just as the Mantschu *chacha*, "man," and *ama*, "father," stand over against *cheche*, "woman," and *eme*, "mother," or the Finnic *ukko*, "old man," and African Ibo, *nna*, "father," over against *akka*, "old woman," and *nne*, "mother." The numerals have not escaped being distinguished in a similar manner; *tizi* is "one" in Lushu, and *tazi*, "two;" "three" and "four" are *ngroka* and *ngraka* in Koriak, *niyokh* and *niyakh* in Kolyma, *gnasog* and *gnasag* in Karaga, and *tsúk* and *tsaak* in Kamschatkan, while in Japanese *fitó*, *mi(tsu)*, and *yo*, are "one," "three," and "four," *fŭtá*,

[1] Tylor: "Primitive Culture," i. pp. 199-201.

*mu(tsu)*, and *yá*, "two," "six," and "eight."[1] The Grebo of West Africa can distinguish between "I" and "thou," "we" and "you," solely by the intonation of the voice, *mâ di* being equally "I eat" and "thou eatest," *a di*, "you" and "we eat," and in Bâ-ntu Mpongwe *tŏnda* means "to love," *tōnda*, "not to love."[2] (4) An internal change of consonant will be the next mode adopted by language of marking a grammatical idea. Thus in Burman the active is distinguished from the passive or neuter by aspirating an unaspirated consonant, *kya*, for instance, being "to fall," but *khya*, "to throw," *pri*, "to be full," *phri*, "to fill."[3] (5) Fifthly, position may be the determining mark of relations of grammar, as is so pre-eminently the case in Chinese and the Taic languages. It makes a good deal of difference in English whether we say, "The man killed the dog," or "The dog killed the man." (6) Another determining mark is reduplication, which is common to all the languages of the world though used to express very different grammatical ideas. Sometimes it may denote a past tense, as in Aryan (δέδωκα, *cecidi*, *did*, &c.); sometimes a plural, as in the Bushman *tu-tu*, "mouths," the Sonorian *qui-qui*, "houses," or the Malay *raja-raja*, "princes;" sometimes a collective, as in the Canarese *nîru gîru*, "water and the like;" sometimes a superlative, as in the Accadian *gal-gal*, "very great," the Mandingo *ding-ding*, "a very little child," or the French *beaucoup-beaucoup*, "very much;" sometimes

[1] See Sayce: "Principles of Comparative Philology," 2nd edition, p. 253.

[2] Wilson: "Grammar," p. 32.

[3] Schiefner: "Tibetische Studien" (1851), p. 30.

continuous action, as in the Dayak *kaká-kaka*, "to go on laughing loud," or the Tamil *muru-muru*, "to murmur;" sometimes intensity, as in the Sanskrit *upary-upari*, "higher and higher," the Greek παμ-φαίνω, "to shine brightly," or the Dayak *ku lyang ku lyang*, "to think deeply;" sometimes emphasis and asseveration, as in the Dayak *kwai kwai*, "very strange!" *shi shi*, "yes, yes;" sometimes frequentative or repeated action, as in the Brazilian *acêm*, "I go out," *ace-acêm*, "I go out frequently," *oce-cem*, "they go out one after the other."[1] The reduplication is often a broken one, that is, only the first syllable or part of a syllable is reduplicated, as in the Latin *mo-mordi* for *mor-mordi*. Broken reduplication is very common in the Aryan languages, but Brugman[2] has shown reason for believing that it has arisen out of an earlier complete reduplication through the action of phonetic decay. Now and then the reduplication takes place in the middle of a word, as in the Sonorian Tepeguana where some plurals are formed by repeating the second syllable, as in *aliguguli*, "boys," from *alguli*, "boy," or a medial syllable, as in *hiim*, "gourds," and *googosi*, "dogs," from the singulars *him* and *gogosi*.[3] Instead of the first syllable, only the initial vowel of a word may undergo reduplication; thus in Tepeguana *ali*, "child," is *a-aii* in the plural, *ogga*, "father," is *o-ogga*, *ubi*, "woman," is *u-ubi*. On the other hand, a word may be lengthened by the repetition of the vowel at the end, as well as in the middle; the Botocudos of Brazil, for instance, turn *uatu*

[1] Platzmann: "Brasilianische Grammatik," chap. xv.
[2] In Curtius' "Studien," vii. pp. 185 *sq*.
[3] Buschmann: "Abhandlungen d. Berlin. Akad.," 1869, i. p. 122.

"a stream," into *uatu-u-u-u*, "ocean;" with the Aponegricans "six" is *itawuna*, "seven," *itawu-ú-una*, while the Madagascar *ratchi*, "bad," becomes *ra-a-atchi*, "very bad."[1] When whole words are reduplicated a change may be made in the initial consonant of the second part of the reduplication; thus in Canarese the initial consonant becomes the guttural *g*, as in the example quoted above, and the French *pêle-mêle* and English *hurdy-gurdy* are familiar instances of the same fact. Sir John Lubbock[2] has made an interesting calculation of the proportion of reduplicated words found in English, French, German, and Greek on the one side, and some of the barbarous languages of Africa, America, and the Pacific on the other, the result being that whereas "in the four European languages we get about two reduplications in about 1,000 words, in the savage ones the number varies from 38 to 170, being from twenty to eighty times as many in proportion." Reduplication, in fact, is one of the oldest contrivances of speech. It is largely employed by children in their first attempts to speak, and we need not, therefore, be surprised at finding it so persistently holding its ground both in the nursery and among barbarous tribes. The Polynesians seem to have a special affection for it, though on the other hand, Mr. Matthews tells us that in North America while reduplication is a prominent feature of the Dakota verb it occurs in only one verb in the closely allied Hidacha dialect.[3]

[1] The whole subject of reduplication has been exhaustively treated by Professor Pott, to whose work reference should be made: "Doppelung als eines der wichtigsten Bildungsmittel der Sprache."

[2] "On the Origin of Civilization," pp. 403-405.

[3] "Ethnography and Philology of the Hidatsa Indians," p. 77.

Reduplication, however, is one of the most important modes adopted by language for denoting the relations of grammar; it is, in fact, one of the most obvious and natural of its outward means of expressing those inward forms and grammatical conceptions which the human intelligence has painfully struggled to realize.[1]

The common division of speech into formal and material is at once defective and misleading. The articulate sounds of which words are composed may indeed be called their matter, but they do not become words, do not constitute a part of speech until they have thought and significancy breathed into them like the breath of life into man. This significancy is a relative one, that is to say, the meaning of a word depends upon its relation to some other. But this relation may be of two kinds, it may exist either between the ideas denoted by the words or between the words when coupled together in some particular sentence. In the first case we have to do with sematology, in the second with grammar. We can understand what is meant by the word *tree* only by comparing and contrasting the idea of *tree* with other cognate ideas; but the relation between *tree* and *sheds* in such a sentence as "the tree sheds its leaves," is of a totally different nature. The idea of *tree* remains the same whatever be the outward symbol by which it is expressed, whether *tree*, or *arbor*, or *baum*, or anything else; the relation between *tree* and *sheds* is one that can be discovered only by a historical and comparative investigation of English grammar. It is to this grammatical

[1] See Pott: "Humboldt's Verschiedenheit des menschlichen Sprachbaues" (1876), i. pp. 305, 306.

relation alone that the term *formal* is strictly applicable; it has to do with the forms, or, as in the instance before us, the want of forms, whereby the relations of grammar, the relations, that is, of words in a sentence, are denoted. Going back to the primitive sentence-word, we shall have to distinguish between the material sounds of which it was composed, the meaning it always possessed whenever and however used, and the form (or position) that it assumed according to the occasion on which it was used. The child who says "Up!" always attaches the same signification to the general idea contained in the word, but whether it is to be regarded as an imperative, a hortative, an optative, or any other particular grammatical form is left to the context, the tone and gesture, or the intelligence of the hearer. Language consists of the material, the significant, and the formal, and it is only the latter, that part of language, in fact, the origin of which we have elsewhere traced to gesture, that properly concerns morphology.

Whatever, therefore, belongs to grammar belongs also to morphology. Not only general form and structure, but also grammar in the narrower sense of the word, as well as composition, and what our German neighbours term "word-building" must be included under it. Composition, indeed, is but a species of declension and conjugation. *Parricida* and *patris* (*oc*)*cisor*, φερέοικος and οἶκον φέρει, have exactly the same force and meaning. The only difference between *good-for-nothing* as a compound and "he is good for nothing" in a complete sentence, is that the first can be used as an attribute. The ordinary genitive of the Semitic tongues, the so-called "construct

state," is really an instance of composition, the first noun —that which "governs" the second—being pronounced in a single breath with the other, and accordingly losing the case-terminations. This did not happen originally, as may be seen from the occasional occurrence of these terminations even in Assyrian, which is more strict in following out the rule than any other of the cognate idioms. The power of composition is greater in some languages than in others. The polysynthetic sentences of an American dialect present the appearance of gigantic compounds, with this difference, however, that in a true compound the language has put together two words that have already been used independently, or at all events are capable of being used independently, whereas in the less advanced American languages the several members of the sentence have never attained the rank of independent words which can be set apart and employed by themselves. Even in some of the compounds of the Aryan family, where the flectionless "stem" shows itself, it may be questioned whether we have not before us the relics of that earliest stage of speech when the flections had not yet been evolved, and when the relations of grammar were expressed by the close amalgamation of flectionless stems in a single sentence-word. However that may be, the power of forming compounds possessed by the Aryan group of languages stands in marked contrast to the repugnance felt by the Semitic tongues in this respect. Composition is as rare in Semitic as it is common in Aryan, and this contrast between the two families of speech is one of the many that demonstrate the radical difference existing between them. Perhaps the

extended use made by the Semitic languages of denoting the relations of grammar by internal vowel-change had much to do with their objection to the employment of compounds. They are less agglutinative in character than the Aryan dialects, truer, in fact, to the principle of flection, and the same instinct that makes them represent the ideas of "killing" and "a killing" by *kodhêl* and *kidhl* (*kedhel*), rather than by *trucida-n-s* and *trucida-ti-o(n)*, makes them also use two unallied roots like *hâlach* and *yâtsâ* where the Aryan would have said *ire* and *ex-ire*. Even within the Aryan family itself we find the Greek with compounds like the comic λεπαδο-τεμαχο-σελαχο-γαλεο-κρανιο-λειψανο-δριμ-υπο-τριμματο-σιλφιο-παραο-μελιτο-κατα-κεχυμενο-κιχλ-επι-κοσσυφο-φαττο-περι-στερ-αλεκτρυον-οπτ-εγ-κεφαλο-κιγκλο-πελειο-λαγῳο-σιραιο-βαλη-τραγανο-πτερύγων,[1] and the Latin comparatively poor in them, while modern English, in spite of the loss of its flections, lags but little behind German. Russian can form such specimens of agglutination as *bezbozhnichestvovat*, "to be in the condition of being a godless person," from *bez Boga*, "without God," and classical Sanskrit almost dispenses with syntax by its superabundant use of composition. Where syntax is highly developed, as it was in Latin, the growth of composition is checked and limited.

Composition has been a fruitful source of grammatical flection, and a still more fruitful source of what is meant by "word-building." It is highly probable that the person-endings of the Aryan verb *as-mi*, *a(s)-si*, *as-ti*, or ἐσ-μι, ἐσ-σι, ἐσ-τι, are but the personal pronouns closely compounded with the verbal stem. Such, certainly, has been the case

[1] Aristoph. "Eccl." 1169.

with the so-called *tempus durans* of Aramaic, where *kâdhêlnâ*, "I am killing," is resolvable into *kâdhêl*+*'anâ*, "killing + I," and *kâdhlath*, "thou art killing," into *kâdhêl* + *at'*, "killing + thou."[1] The Latin imperfect and future in *-bam* and *-bo* seem to be compounds of the verbal stem with the verb *fuo*, "to exist,"[2] like the perfect in *-ui* or *-vi* (*fui*), while the pluperfect *scripseram* is a combination of *eram* or *esam* and the perfect *scripsi* (itself formed from the verbal stem *scrib-* and the old perfect *esi* of the substantive verb "sum"). So, too, the form *amavissem* is just as much a compound of *amavi* (*ama*+*fui*) and *essem* (*es*+*siem*) as is *amatus sum* of the passive participle and the substantive verb. If we turn to our own language we can trace our perfects in *-ed* back to the Gothic amalgamation of the verb with *dide*, the reduplicated perfect of the verb *do*, while the origin of the French *aimerai* in the infinitive *aimer* (*amare*) and the auxiliary *ai* (*habeo*) is as plain as that of the Italian *dármelo* ("to give it to me") or *fáteglielo* ("do it for him"). The real character of the compound has come to be forgotten in course of time, and its final part has gradually lost all semblance of independence and been assimilated to the terminations which simply denote grammatical relations. The general analogy of the language has been too strong for it, and the agglutinated word has become a flection.

But there are many suffixes which are not flections—

[1] See Sayce: "The Tenses of the Assyrian Verb," in "J. R. A. S.," Jan. 1877.

[2] Not *dhâ*, "to place," like the perfect in the Teutonic languages, since Old Irish has *b* (*e.g. caru-b* = "amabo"), and in Keltic *b* cannot come from *dh*.

that is to say, which do not denote the relations of grammar, or rather the relations that exist between the different parts of the sentence. In *I loved* for *I love-did* the grammatical relation which we name a perfect tense, is not really expressed by the suffixed word *did*, but by the reduplication which that word has undergone. It was the reduplication that gave *did* (*dide*) the force of a perfect, and the attachment of *did* to another verb merely handed on to the latter the perfect force which it already possessed. Strictly speaking the suffix *-ed* is a flection only because it is the relic of a reduplication, the flection—that is to say, the expression of a grammatical relation—lying in the reduplication or *form* of the word. So, too, when we find *dêv-mā*, meaning "in God," in Gujerati, or *andhê-mẽ*, meaning "in the blind," in Hindustani, we must not suppose that the locative sense actually lies in the suffixes *mā* and *mẽ*. These suffixes go back to the Sanskrit *madhyê*, "in the middle," where the flection is to be sought in the termination *i* (contained in $\hat{e}=a+i$) not in the stem *madhya*, "middle."

When, then, we say that composition may be a fruitful source of flection, what we mean is this. Flection is the means adopted by a certain class of languages for expressing the relations that exist between the members of a sentence, but a perception of these relations must first grow up in the mind before external means are found for embodying them. The idea of past time must be arrived at and realized before the simple process of reduplication can be adopted to denote it. Not only in other languages but also in the Aryan family of speech reduplication serves to represent other relations of gram-

mar than that of past time. When the Frenchman says *beaucoup beaucoup*—meaning "very much"—he is employing reduplication to express the superlative relation just as much as the old Accadian with his *galgal*, "very great," while the very fact that there are Greek presents like δίδωμι and τίθημι, ought to show that there was once a time in the history of Aryan speech when reduplication served other purposes than that of denoting past time. So it is with all the rest of the grammatical machinery which we call flection. First of all the growing intelligence came to have, as it were, an intuition of certain relations between the parts of a sentence, and then sounds and forms already existing were adapted to denote these. And the very same form might at successive periods in the development of a language be adapted to denote different relations, as we have just seen was the case with reduplication. When suffixes were used for a similar purpose, they too had to follow the general analogy. Many of these suffixes seem coeval with the beginnings of Aryan speech, at least so far as we know anything about it, but others of them, like the person-endings of the verb, are really instances of composition, the final part of the compound having become a mere suffix, and so, like many other suffixes, been adapted to the use of flection.

This brings us to those suffixes which have never been applied to a purely flectional purpose. If we turn over the pages of an English dictionary we shall come across the two familiar words *knowledge* and *wedlock*, which at first sight seem to have nothing in common. On tracing them back to earlier forms, however, we find that *know-*

*ledge*, Old English *know-leche*, like *wed-lock*, Old English *wed-lâc*, are both compounded with the Anglo-Saxon *lâc*, "sport" or "gift," the Old High German *leih*, the Old Norse *leikr*, and the Gothic *láiks*. The word still survives in the north of England under the form of *laik*, "to play," and the provincial *lake-fellow* is merely "play-fellow."[1] Several abstracts were formed in Anglo-Saxon by the help of it; thus we have *feoht-lâc*, "fight," *gudh-lâc*, "battle," *bryd-lâc*, "marriage," *reaf-lâc*, "robbery."

Now what has happened in the case of the English *lâc* has happened in the case of a good number of other words in all the languages spoken throughout the world. Words originally independent and distinct become so glued together in composition that one of them loses its personal identity, as it were, and comes to be the mere shadow of the other, whose meaning it qualifies and classifies. Thus, for instance, the Greek κατὰ, when compounded with the verb ἄγω, "to lead," limits the sense of the latter to "leading down," and our own *hood* or *head*, the Anglo-Saxon *hâd*, "a state," in words like *Godhead* or *maidenhood*, refers the nouns to which it is attached to a new and particular class.

Besides flectional suffixes, then, classificatory or formative suffixes also may ultimately be due to the process of composition. Upon them, too, analogy will have worked its influence, assimilating them to the other suffixes which in course of time they had come to resemble. When composition had once reduced a word to the condition of a mere adjunct of another word, there

[1] Earle: "Philology of the English Tongue" (2nd edition), p. 305.

was no reason why it should not be put to the same uses as other similar adjuncts. When the root *bhar*, "to bear," in such Latin compounds as *leti-fer* could no longer be distinguished from the suffix *-tio(n)* in words like *na-tio*, it was naturally treated in the same way.

But it does not follow, as a good number of writers on language have assumed, that because some of the classificatory suffixes are examples of composition, all of them are so, any more than in the case of flection and the flectional suffixes. Indeed, we have only to glance at the numerous suffixes employed by our own Aryan family of speech in forming or "building" words to see how impossible it would be to trace back a large proportion of them to independent words. How, for instance, could we claim any such origin for the suffixes *-la-* and *-ra-* in *querela* and καμπρός, or the suffixes *-ana-*, *-na*, and *-an* in *pecten*, *donum*, and ἱκανός? With such suffixes all we can do is to watch the changes they have undergone, or caused other sounds to undergo, through the action of phonetic decay and false analogy. Thus in Latin where the combination *sr* changes into the softer *br*, stems like *ceres* (Sanskrit *'siras*), "head," and *fes* (as in *festus*) have turned into *cerebrum* and *Februus* when combined with the suffix *-ra;* and if we take the suffix *as* itself, we shall find its sibilant passing into *r* before another vowel, and so originating a long series of curious transformations. The *r* which we get in the genitive of *temporis* was transferred by analogy to the nominative also, where no vowel followed it, and though there was a struggle at first between the twin forms in *s* and *r*, traces of which survive

in the twin *arbos* and *arbor*, the later and incorrect form with *r* finally carried the day, and classical Latin knows only of a *sopor*, not a *sopos*. But it may be asked why should the penultimate syllable of *sopōris* be long whereas it is short in *tempŏris* and *arbŏris*, and why, too, should *sopor* be masculine while *tempus* is neuter? Here, again, false analogy has been at work. A certain number of masculine nouns terminating in *-tor* and denoting agents, like *dator* or *victor*, existed in the language, and when *sopos* was changed to *sopor*, it was assimilated to these both in gender and in declension. Even *victor*, however, had passed under the action of false analogy. When we compare the Latin *victor* with *pater*, or the Greek σωτηρ with πατήρ, it is at once clear that we are dealing in each case with the same suffix, although in *victor* the vowel has been thickened into the fuller *o*. But while *victor* and σωτήρ have a long vowel in the oblique cases, this is not the case with the much older words *pater* and πατήρ (accusative πατέρα). It is evident, therefore, that this long vowel must have been a sort of after-thought; and so, in fact, it was. First of all the vowel of the nominative was lengthened to compensate for the loss of the final sibilant (*paters*), and the quantity of the vowel in the nominative was then analogically extended to the other cases as well. How far this was from having been originally the case may be gathered from another form of the same suffix which we have in the Sanskrit *patram*, the Greek πτέρον, and the Latin *ara-tr-um*. Here the vowel between the two consonants of the suffix has disappeared altogether, as it has also in words like the Latin *sæclum* for *sæ-culu-m*, or the Gothic *nê-thla*, our *needle*, where the

suffix, in spite of the change it has suffered, really goes back to *tar*. The latter group of words (in *tar*), however, is distinguished from the former (in *trum*) in both signification and gender, the masculine agent being replaced by a neuter noun of instrumentality. We can easily see how such a transition of meaning must have come about. The agent presupposes the act just as much as the act presupposes the agent. Agent and act, in fact, are correlative terms, and the parent-Aryan distinguished them, not by the classificatory suffix—for they both belonged to the same class—but by the flectional suffix, which was in the one case *-s* in the nominative singular, and in the other *-m*. The Latin *trucidator* and the English *murder* (formerly *murther*, like *slaugh-ter* and *laugh-ter*) have precisely the same suffix, and it is only a recollection of the difference in meaning in the flectional suffixes which has survived their loss that prevents them from being used with the same signification. Even these flectional suffixes themselves—as we shall see hereafter—did not originally imply that difference of meaning to the expression of which they were afterwards adapted. In nouns like the Latin *virus* or the Sanskrit *'siras-*, the final sibilant denoted a neuter rather than a masculine or a feminine, while *servum* or *humum* show that the final labial might characterize the objective case of both masculine and feminine nouns.

The suffix *tar* (*ter*) brings us back to those classificatory suffixes which trace their descent from independent words, if, as is very probable, we have to connect it with the root found in our *through*, the Latin *trans* and *ter-minus*, the Zend *tarô*, "across," the Sanskrit *tar-âmi*,

"I pass over," and perhaps, too, the numeral *tri, tres, three*.[1] It is not difficult to understand how a word signifying "to go through with a thing," could be taken to form nouns of agency. What more suitable description could be given of "a giver" than "one who goes through with giving," *dator(s)*? The antiquity of this use of the suffix in our family of speech may be gathered from the fact that it is employed to form those nouns of relationship which are the first to require a name. *Brother, sister, daughter, mother, father*, all contain this ancient suffix. *Brother* (*bhrâ-tar*) is "the bearer," from the root *bhar*. *daughter*, "the milker" or rather "sucker," from the root *dugh*, while the Sanskrit grammarians derive *father* (*pitar*) and *mother* (*mâtar*) from the roots *pâ* and *mâ*, which respectively mean "to defend" and "to create." It is obvious, however, that both "father" and "mother" must have received names long before it was necessary to speak of "going across" or "passing through," and that our Aryan ancestors would not have waited to compound two words together before giving names to the nearest and dearest of relationships. As a matter of fact, in almost all languages names have been found for the parent in the two simple labial utterances *pa* and *ma;* and the identity of these with the Aryan roots *pâ* and *mâ* must be a pure accident. What seems to have happened in the case of our names of relationship was this. When the Aryan family first comes before us in the records of speech, it is as a civilized clan with a vast but indeterminate background of unknown history lying

[1] The only difficulty here is that the base of the feminine in Sanskrit is *tisar*.

behind them. They had long since entered upon what may be termed the epithetic stage, when man discovered that he was a poet, and began to invent epithets for the objects about him, and to form compounds. It was at this stage of culture and civilization that the Aryan community coined compound epithets for *brother*, for *daughter*, and for *sister*, which succeeded in driving out and replacing the older words that had preceded them. The new compounds in *tar* took the fancy of the community, and were widely extended by the force of analogy. The old labials which had done duty for the ideas of "father" and "mother" followed the fashion set by the younger names of relationship, and so just as *bhrâ-tar* had come to signify "brother," *pa-tar* and *mâ-tar* came to signify "father" and "mother."

Languages do not begin with composition. If the sentence is anterior to the word, a considerable time must elapse between the first beginnings of a language and the piecing together of two independent words. Isolating tongues like the Chinese or the Burman, where so much use is made of composition in order to create new conceptions or to define old ones, are shown by this very fact to have passed into a decrepit stage of existence. The epithetic stage is one far advanced in the history of a speech; it implies poetic imagination, a certain measure of culture and civilization, and the germs of a mythology. The new compounds of this epithetic stage follow the genius and analogy of the language to which they belong. If the formation of words depends largely on the use of suffixes, the newly coined words will in time adapt themselves to the old rule; what were

once independent words will become suffixes, and be employed in exactly the same way as the other suffixes of the language.

The very existence, then, of classificatory suffixes due to composition in our Indo-European idioms implies the existence of earlier suffixes for which we cannot claim a similar origin. We have already seen that this is the case with many of the suffixes which serve the purposes of flection; though the person-endings of the verb go back to separate words, every attempt to discover such a derivation for the principal case-endings has ended in failure. What is true of the case-endings is pre-eminently true of those suffixes which are neither flectional nor classificatory. If we analyze the Latin *alumnus*, we find first of all the flectional suffix *-(u)s*, then the classificatory suffix *mino*, which relegates the word to the same class of middle participles as the Greek τυπτόμενος, and lastly, the suffix *u*, which intervenes between the root *al* and the classificatory suffix *mino*. We may call this *u* a "connecting-vowel," or "an euphonic vowel," or anything else we choose, but the fact remains that it is a suffix which can be separated from the root *al*. It is a suffix, however, which is neither flectional nor classificatory, and may be termed secondary for want of a better name. Secondary suffixes play an important part in our family of speech, and just as a flectional suffix often appears as a classificatory one, so, too, a classificatory suffix may appear as a secondary one. If, for example, we compare a word like *civitas* (*civ-i-ta-t-s*) with *sec-ta*, we may not only get the secondary suffix *-i-*, following immediately upon the root, but also a reduplication of the classifi-

catory suffix *ta*, which here at least can have no classificatory sense. We may accordingly define a secondary suffix as one which does not refer the word of which it forms a part to any particular class; and where we have several classificatory suffixes amalgamated together the first of these have generally become secondary. Thus the English *songstress* is a combination of two suffixes, one Saxon and the other Romanic, which equally denoted the feminine. By the side of *sang-ere*, "the singer," stood in Anglo-Saxon *sang-estre*, "the songstress;" it was only when the classificatory significance of the termination had died out that a new one which really went back to the Greek -ισσα through the Latin *issa* (as in *abbatissa*), and the French *-esse* (as in *justesse*),[1] was attached to it, and so the old classificatory suffix became a merely secondary one. In fact, as soon as the force of a classificatory suffix has been weakened in a word, a fresh classificatory suffix is always ready to be attached to it, just as children will talk of *more-er* and *most-est*, or as Lord Brougham introduced the equally anomalous *worser*.

Now these secondary suffixes play a most important part in a large number of languages, and more especially in our own Aryan ones. It is seldom that a classificatory or flectional suffix can be added immediately to the root, as in the Sanskrit *ad-mi*, "I eat;" a secondary suffix has usually to intervene, by means of which the root is raised to what has been variously termed a base, a theme, or a stem. So far as the Indo-European family of speech

[1] Brachet, however, holds that *justice* and *justesse* are collateral forms, both from the Latin *-itia*.

is concerned, it is probable that even such exceptions to the general rule as that of *ad-mi* are really due to phonetic decay, which has worn away the original stem to a simple monosyllable, as it has done in so many English words like *man* or *fall*. When we come to deal with roots, we shall see good reason for believing that they were all or for the most part once dissyllabic, and the tendency that many children show to turn the monosyllables of modern English into dissyllabic words may be but an instinctive reversion to the early type of speech. No doubt it is very possible that just as classificatory suffixes have been changed into secondary ones, so on the other hand secondary suffixes may have come in course of time to assume a classificatory character. A conspicuous example of this may be found in the suffix *ya*, which in Greek words like φέρουσα for φερο-ντ-*ya*, or δότειρα for δοτ-ερ-*ya*, has become a mark of the feminine gender. A distinction of gender is by no means engrained in the nature of things, and the majority of spoken languages, such as most of those which are agglutinative or isolating, know nothing at all of it. In some idioms, those of the Eskimo, Chocktaw, Mushtogee, and Caddo, for instance,[1] the place of gender is taken by the division of objects into animate and inanimate, while elsewhere they are divided into rational and irrational. In the Bâ-ntu dialects of South Africa, nouns are separated into a number of classes, in one case as many as eighteen, by means of prefixes which were originally substantives like our *-dom*, *-ship*, or *-hood*; and the agreement of the pronoun, adjective, and verb with

[1] "Archæologia Americana," ii. pp. 25, 166, 169.

the substantive is denoted by the employment of the same suffix. Bleek has not inaptly compared these classes of the Bâ-ntu noun with the genders of our own family of speech. Thus if we were to take a noun like I-SI-*zwe*, "nation," which belongs to the *si*-class or gender, in order to express the sentence "our fine nation appears, and we love it," the Kafir would have to say I-SI-*zwe* S-*etu* E-SI-*χ'le* SI-*ya-bonakala si*-SI-*tanda*, literally "nation ours appears, we-it-love." Similarly the noun U-LU-*ti*, "stick," would require a corresponding change of prefix in the words in agreement with it, and the sentence would run: U-LU-*ti* LW-*etu* O-LU-*χ'le* LU-*ya-bonakala si*-LU-*tanda*.[1] There are many indications that the Aryan language, or rather the ancestor of that hypothetical speech which we term the parent-Aryan, was once itself without any signs of gender. We have only to turn to Latin and Greek to see that the words which denote "father" and "mother," *pater* and *mater*, πατὴρ and μητὴρ, have exactly the same termination, while so-called diphthongal stems as well as stems in *i* (*ya*) and *u* (like ναῦς and νέως, πόλις and λῖς) may be indifferently masculine and feminine. Even stems in *o* and *a*, though the first are generally masculine and the second generally feminine, by no means invariably maintain the rule, and feminines like *humus* and ὁδός or masculines like *advena* and πολίτης show us that there was a time when these stems also indicated no particular gender, but owed their subsequent adaptation, the one to mark the masculine and the other to mark the feminine, to the influence of

[1] Bleek: "Comparative Grammar of the South African Languages," pp. 97, 98.

analogy. How analogy came to act seems to have been as follows. First of all the idea of gender was suggested by the difference between man and woman, male and female, and, as in so many languages at the present day, was represented not by any outward sign, but by the meaning of the words themselves. Thus in the Hidacha of North America we are told that "gender is distinguished by using, for the masculine and feminine, different words, which may either stand alone or be added to nouns of the common gender,"[1] and in the Sonorian languages further south it can only be denoted by the addition of words which signify "man" and "woman."[2] Then when the conception of gender had once been arrived at it was extended to other objects besides those to which it properly belongs. The primitive Aryan had not yet distinguished the object thought of from the subject that thought of it; he was still in the stage of childhood, and just as he transferred the actions and attributes of inanimate objects to himself, so too he transferred to them the actions and attributes of himself, and endowed them with a life similar to his own. The same age which saw the creation and growth of a mythology saw also the origin of gender in nouns, and the distinction of gender in the demonstrative pronouns, due to their reference to animate beings, reacted on the nouns expressive of inanimate objects to which they likewise referred. As soon as the preponderant number of stems in *o* in daily use had come to be regarded as masculine

[1] Matthews: "Ethnography and Philology of the Hidatsa Indians" (1877), p. 95.

[2] Buschmann: "Abhand. d. Berliner Akademie" (1869), i. p. 103.

on account of their meaning, other stems in *o*, whatever might be their signification, had to follow the general rule and be classed as masculine nouns. How readily the gender of a word may be determined by its termination has been already seen in the history of the Latin stems in *-os*. Here and there the constant use of a word with particular pronouns or its obvious and natural meaning resisted the common tendency, and hence the preservation of such anomalies as ὁδός, *humus*,[1] and *advena* mentioned above. The suffix *ya*, however, like the suffix *-ιδ-* (as in αὐλητρίς) in Greek or the suffix *-ic-* (as in *victrix*) in Latin, formed part of a class of words which all followed the dominant type; neither use nor meaning interfered with the appropriation of them all to express the feminine gender. The accident by which the suffix was attached to words which chiefly denoted female agents eventually caused it to become a classificatory instead of remaining a mere secondary suffix. But the Aryans were not contented with only two genders, as the Semites and some other races were. A time came when the Aryan awoke to the consciousness that he was essentially different from the objects about him, that the life with which he had clothed them was really but the reflection of his own. He began to distinguish the agent from the patient, and to turn his middle conjugation into a passive one. The first sign of this new-grown consciousness was the formation of a nominative for the first personal pronoun; *ego*, ἐγών, the Sanskrit *aham*, is a far later creation

[1] The Sanskrit equivalent of *humus*, however, has had to submit to the prevailing analogy, and in the form of *bhûmi* assume what has become the feminine suffix.

than the objective *me* or *mâ*, and whether it be a compound or not, as some scholars believe, at all events it marks the epoch when the "me" became an "I." The discovery had been made that a difference existed between the nominative and the accusative. But this difference existed only in the case of animate beings, or of those objects which the custom of language and the habits of thought it had produced regarded as animate; there was another class of objects and ideas which were beginning to require a name and yet could not be reckoned as coming under either of the two genders with which the language was already acquainted. The same development of thought which had revealed the distinction between subject and object brought with it also the conception of abstracts or general terms. Besides the individual trees which had long ago received their names, the idea of "tree" itself now needed a word to express it, and the speaker was no longer contented with detailing his single utterances one by one, but wanted a general term like "word" or "speech" wherein to sum them up. And so the new class of neuter nouns came into existence, which were really nothing more than old accusative cases or bare stems used as nominatives and given a separate life of their own. So far as form goes, the Greek δένδρον and ἔπος cannot be distinguished from λόγον and ὄπες, the Sanskrit *vâchas* representing both ἔπος and ὄπες alike, any more than the Latin *regnum* and *vulgus* can be distinguished from *dominum* and *reges*. In the pronouns the bare stem in *t* or *d*, which had once served for all cases and all genders, was set apart for neuter nouns, and the Aryan declension was made

complete with its encumbrance of three genders, which it has needed the practical genius of the English language to shake off. The further changes that took place in the distribution of these three genders must be described by the historical grammars of the special languages of the Aryan family: the age came when their original meaning and intention was as much forgotten as that of mythology; they were looked upon as the functions of certain suffixes which thus became classificatory, and, as in Latin stems in *-as* or French nouns like *mer* which owe their gender to the confusion of the plural nominative *maria* with the singular nominative of *musa*, they became the sport and puppet of false analogy. The mixture of dialects which varied as to the genders they assigned to particular nouns completed the confusion, and modern German is an instance of a language which still clings to an outward excrescence of speech which originated in childish habits of thought and has now lost all sense and reason for its existence. A mere tax upon the memory and an embarrassment to free literary expression, it is no wonder that German genders are a sore trial to the children, who are sometimes several years before they learn to use them correctly. In this respect they resemble the Swedish peasantry, who are said to find an equal difficulty with the genders of their own tongue.

The origin of gender is one of the questions belonging to what some German scholars have termed "the metaphysics of language." The metaphysics of language deals with the source and nature of grammatical ideas as distinct from the phonetic machinery by which they are expressed; it seeks by a comparison, firstly of cognate

dialects and then of families of speech, to discover the conception which lay at the bottom of such grammatical facts as gender, number, and the like. We want to know not merely how the relations between the several parts of the sentence are expressed, but what those relations actually are. The idea must exist before phonetic means are adapted to represent it, and in order to reach it we must scientifically trace the history of the phonetic means. The metaphysics of speech, therefore, is but the second branch and division of its morphology, bearing the same relation to the inquiry into the growth and origin of stems and suffixes and suchlike phonetic forms of grammar that sematology does to phonology. The morphology of language is as much concerned with grammatical ideas as with the external form in which they are embodied. It is these grammatical ideas more than their phonetic embodiment that constitute the *structure* of a tongue.

Let us see, for example, whether we can track the conception of number back to its first starting-point. Strange as it may seem there are some uncivilized languages which make as little distinction between the singular and the plural as we do ourselves when we use words like *sheep*. Thus Mr. Matthews states that "Hidatsa nouns suffer no change of form to indicate the difference between singular and plural,"[1] and in the Sonorian tongues, according to Buschmann,[2] "the simple word in the singular serves also for the plural," while the monosyllabic Othomi can distinguish between singular

[1] "Ethnography and Philology of the Hidatsa Indians," p. 96.
[2] "Abhandlungen d. Berlin. Akad." (1869), i. p. 122.

and plural only by the prefixed article *na* and *ya*,[1] and the Amara of Africa can only say *fürüsn ayühu*, "I have seen horse," leaving the hearer to decide whether the horse is one or many. In spite of the vast length of time during which these languages have been shaping and perfecting themselves, the conception of number is still so far from being consciously realized that no phonetic means have yet been adapted or devised to express it. If we turn to the Tumali of Africa we find in the case of the personal pronouns *ngi*, "I," *ngo*, "thou," and *ngu*, "he," a slight advance upon this poverty of thought. Here the plural is denoted by the postposition *da*, "with," so that *ngi-n-da*, "we," is literally "(some one) with me." The mind has come to distinguish between itself and that which is outside itself, to realize, in fact, that it has an individual existence distinct from that of some one else, and so the conception of duality is attained. At this conception mankind stopped for a long while; indeed, there are many races and tribes who have not even yet passed beyond it. Wherever the so-called plural is formed by means of reduplication—that is to say, wherever the doubling of a thing is the furthest point of multiplicity to which the mind can reach, there we have not yet a true plural, but only a dual. All over the world reduplication seems to have been the earliest contrivance for denoting something beyond the singular, and to this day in Bushman, as in many other savage jargons, it serves for a plural.[2] The same evidence that is borne by the so-

[1] "Eléments de la Grammaire Othomi," in the "Revue Orientale et Américaine," p. 21.

[2] Friedrich Müller: "Grundriss der Sprachwissenschaft," i. 2, p. 27.

called reduplicated plural is borne also by the numerals. The aborigines of Victoria, according to Mr. Stanbridge, "have no name for numerals above two;"[1] the Puris of South America call "three" *prica* or "many," which is also the original meaning of the same numeral in Bushman, and "the New Hollanders," says Mr. Oldfield of the western tribes, "have no names for numbers beyond *two*." It is even possible, as has been already noticed, that our own Aryan *tri, three*, goes back to the same root as that of the Sanskrit *tar-â-mi*, "I pass beyond," and once signified nothing more than that which is "beyond" two. The fact that the conception of duality preceded the conception of plurality, explains how it is that the seemingly useless dual has been preserved in so many languages by the side of the plural. It is a relic of a bygone epoch, a survival, as Mr. Tylor would call it, which tends to be more and more restricted in use until it disappears altogether. In both Aryan and Semitic the dual appears only as an archaic and perishing form. The Æolic, in this as in the throwing back of the accent, the least conservative of the Greek dialects, has lost it entirely; the Latin keeps it merely in *duo, octo*, and *ambo*, and if we pass to the Semitic idioms, the dual of the noun is preserved only in words which denote natural pairs like "the eyes" or "the ears," while in the verb it has been maintained by Arabic alone, and in some exceptional cases by Assyrian. Language, however, did not always proceed at once from the dual to the plural, from the conception, that is, of limited plurality to the conception of unlimited plurality. Many languages pos-

[1] "Trans. of the Ethnological Society," i. p. 304.

sess a trinal number, or what are called inclusive and exclusive forms of the personal pronouns, and in one of the Melanesian idioms, as well as in Vitian or Fijian, we even find a quadruple number formed by the attachment of *tavatz* or *tovatz*, "four," to the pronouns *na*, "you," and *dra*, "we."[1] In Cheroki the dual of the first person has one form when one of two persons speaks to the other, another form when the one speaks of the other to a third, *inaluiha* being "we two (*i.e.* thou and I) are tying it;" *awstaluiha*, "we two (*i.e.* he and I) are tying it." In Annatom, again, *aniyak* is "I," *akaijan*, "you two + I," *ajumrau*, "you two — I," *akataij*, "you three + I," *aijumtaij*, "you three — I." More usually the reduplicated dual led to a plural without the intervention of a trinal number, or the plural was denoted by some word like "multitude" or "heap," which in course of time came to be a plural sign, just as in other instances it came to signify the numeral "three." In the Aryan languages M. Bergaigne has shown[2] that the plural of the weak cases (nominative, accusative, and vocative) was identical with the singular of abstract nouns, and their formatives, *-as* or *-âs*, *-i* or *-î*, *-â* or *yâ*, and *-an*, continued to the last to mark abstracts like the Sanskrit *áhan*, "the day," *lipi*, "writing," *vrajyâ*, "the act of travelling," or *mudâ*, "joy." So in Semitic Assyrian, where an abstract is generally regarded as feminine, the feminine plural in *-utu* has become the termination of singular nouns like *'sarrutu*,

[1] Latham in the "Proceedings of the Philological Society" (1852), p. 59.

[2] "Du Rôle de la Dérivation dans la Déclinaison indo-européenne," in the "Mémoires de la Société de Linguistique de Paris,"

"a kingdom," and then by a curious change of function been appropriated to a certain class of masculine plurals. There are reasons for thinking that the Semitic plural has been based on the dual; however this may be, the suffixes of the Aryan plural, so far at least as the weak cases are concerned, are suffixes which we find elsewhere used as secondary and not classificatory ones.

Even the genitive case, necessary as it appears to us to be, once had no existence, as indeed it still has none in groups of languages like the Taic or the Malay. Instead of the genitive, we here have two nouns placed in apposition to one another, two individuals, as it were, set side by side without any effort being made to determine their exact relations beyond the mere fact that one precedes the other, and is therefore thought of first. Which of the two should thus precede depended on the psychological point of view of the primitive speaker. We are all acquainted with the distinction between the objective genitive where the governed word is the object of the other, as in *amor Socratis*, "love felt for Socrates," and the subjective genitive where the converse is the case, as in *Socratis amor*, "love felt by Socrates," and this distinction has led to two different conceptions of the genitive relation being formed by different races. In the Aryan family, for instance, the genitive must precede its governing noun; *Horsetown*, equally with *horse's town*, means "town of the horse." In Semitic, on the contrary, the position of the words is reversed; here the genitive has to follow, not precede. Perhaps we may see in the position of the genitive in the two great inflectional families of speech a symbol of the characters of the two races.

The Aryan, the inventor of induction and the scientific method, fixes his first attention on the phænomenon and traces it up to its source; the Semite, on the other hand, makes the first cause his starting-point, and derives therefrom with easy assurance all the varying phænomena that surround him.

Now, this apposition of two nouns, which still serves the purpose of the genitive in many languages, might be regarded either as attributive or as predicative. If predicative, then the two contrasted nouns formed a complete sentence, "cup gold," for instance, being equivalent to "the cup is gold." If attributive, then one of the two nouns took the place of an adjective, "gold cup" being nothing more than "a golden cup." The apposition of two substantives is thus the germ out of which no less than three grammatical conceptions have developed—those of the genitive, of the predicate, and of the adjective. It is but another instance of that principle of differentiation which we have found at work upon the phonetic forms whereby the relations of grammar are expressed. Dr. Friedrich Müller has observed [1] that, as a general rule, the attribute and the genitive, or as he terms it the possessive, occupy the same place, and are treated as one and the same relation. In Hottentot, as in Chinese, where the defining noun must precede that which is defined, "right-path" means equally "the right path" and "the path of right," and our own English language is another example of the same usage. In Malay, on the contrary, as in the Semitic tongues, both adjective and genitive have to follow the noun they define; thus the Malayan *ðran ūtan*, or "man

[1] "Grundriss der Sprachwissenschaft," i. 2, p. 2.

of the wood," is literally "man-wood," and *gūmin besar*, "a great mountain," "mountain-great." On the other hand, the predicative relation is marked off from the attributive and genitival by a converse order of words; in Malay, for instance, the predicate is placed before its subject, as in *besar gūmin*, "great (is) the mountain," and the Semitic perfect is formed by affixing the pronouns of the first and second persons to a participle or verbal noun.[1] These primitive contrivances for distinguishing between the predicate, the attribute, and the genitive, when the three ideas had in the course of ages been evolved by the mind of the speaker, gradually gave way to the later and more refined machinery of suffixes, auxiliaries, and the like.

Now it will be noticed that while the predicative relation is contrasted with the attributive and the genitival, the two latter assume the same form. Where the relations of grammar are denoted by position alone, no distinction is made between the attribute and the possessive. There is nothing in the outward form to tell us whether in expressions like *horsetoiwn* or *ōran ūtan*, *horse* and *ūtan* are to be considered as adjectives or as genitives. And in point of fact there is at bottom little or no difference between them. The primitive instinct of language did not err in treating the two conceptions as essentially one and the same. A "gold cup" is exactly equivalent to a "cup of gold." The adjective describes the attribute which defines and limits the class to which its substantive belongs; and so, too, does the

[1] See Sayce: "The Tenses of the Assyrian Verb," in the "J. R. A. S.," Jan. 1877.

genitive. Both indicate the species of a genus, limiting the signification of the substantive, and so having the same functions as those determinatives which, as we have seen, play so large a part in a Chinese or Burman dictionary. In such languages these defining words perform the same classificatory office as the classificatory suffixes of an Aryan dialect; but whereas the classificatory suffixes of an inflectional tongue are neither adjectives nor attributes, the classificatory substantives of the isolating language are really both. We are told that a school-inspector plucked some children a short time ago for saying that *cannon* in *cannon-ball* was a noun instead of an adjective; the pedantry of the act was only equal to the ignorance it displays, and illustrates how often the artificial nomenclature of grammar breaks down when confronted with the real facts of language.

So long therefore as the adjective or genitive is denoted by position only, we cannot draw any true line of distinction between them and the determinatives of the Taic idioms. They all have the same end—that of limiting and defining a noun—of referring it to some special class or investing it with some special quality. Hence it is that the genitive case so frequently assumes the form of an adjective, even in those languages in which the adjective and the genitive have been eventually distinguished from one another. In the Tibetan dialects adjectives are formed from substantives by the addition of the sign of the genitive, as *ser-gyi*, "golden," from *ser*, "gold;" and in Hindustani the genitive takes the marks of gender according to the words to which it refers.[1]

[1] Max Müller: "Lectures," i. p. 106.

Greek adjectives like δημό-σιο-ς remind us of the old genitive δημοσιο, which has become δημοῖο in Homer, or the Sanskrit genitive *'siva-sya* and the pronouns *ta-syâ-s* and *ta-sya-i*, and though the suffix of δημό-σιο-ς was originally rather *-tya* than *-sya*, since a Greek sibilant between two vowels tends to disappear, the two suffixes once performed the same functions and bore the same relation to each other as the demonstratives *sa* and *ta*. The Aryan genitive stands on the same footing as the other cases of the nouns which have been traced back by M. Bergaigne to adjectives used adverbially. If we look at the Bâ-ntu languages we shall have little difficulty in understanding the reason of this close connexion between adjective and genitive. As we have seen, the agreement of words together in these languages is pointed out by the use of common prefixes, which were once independent substantives, and have come to answer somewhat to the marks of gender in Greek and Latin. The same prefixes, however, not only indicate the concord of adjective and substantive, of verb and subject, but also of nominative and genitive. Thus the Zulu would say I-SI-*tya* S-O-*m-fazi*, "the dish of the woman," where the common prefix *si* declares the relation that exists between the two ideas. If we assume that the primary meaning of *si* was "mass," the words I-SI-*tya* S-O-*m-fazi* would properly be read "mass-dish mass-woman." The word *si* is thus the standard and connecting link by means of which the other two are brought together and compared. It had been attached to a certain group of words at a time when the conception of adjective or genitive had not yet been clearly realized,

and when mere position, mere apposition, indicated by itself the association of two ideas. This close association caused it finally to lose all distinctive existence of its own, to become, in short, an "empty word" or formative, the index of a particular class like the classificatory suffixes of our own tongues. Like these suffixes, again, it came to have what would be called in Sanskrit or Greek a flectional power; it not only marked the class to which the substantive belonged, but also the fact that another word was in concord with it. Whether this were a concord of the adjective or the genitive, however, the Kafir dialects have never advanced so far as to determine.

Unlike either the Kafir with prefixes which denote at once attribute, possessive, and even predicate, or the Aryan languages with their suffixes each fulfilling a special function, the Semitic tongues distinguished between genitive and adjective by subordinating the governing word to its "genitive," and keeping the attention fixed on the characteristics which separated species from species within a common genus. While the adjective constituted an independent word by the side of the substantive with which it was joined, the genitive was regarded merely as the latter half of a compound of which the word defined by it was the first part. In the so-called *construct state*, the governing noun is pronounced, as it were, in one breath with the genitive that follows it; its vowels are shortened, and its case-terminations tend to disappear. Thus in Assyrian, while *'sarru rabu* is "great king," *'sar rabi* is "king of great ones," and in Hebrew the construct *dhiv'rê hâ'âm*, "words of the

people," stands in marked contrast to the simple *dhĕvârim*, "words."

The agglutinative languages of Western Asia, again, traversed an altogether different road. In the Accadian of ancient Chaldea, we still find instances in the oldest inscriptions of a genitive by position, which only differs from an adjective by the meaning it bears. Thus, *lugal calga* is "strong king," *lugal 'Uru*, "king of Ur." But a postposition soon came to be added to the second substantive in order to point out more distinctly its place in the sentence, and these postpositions seem originally to have been verbs. At all events, such is the case with one of the postpositions, *lal*, used for the genitive; *lugal 'Uru-lal*, for instance, being literally "king Ur-filling," though the more usual postposition *-na* has lost all traces of its source and derivation. The latter postposition is found throughout the Ural-Altaic family, as in the Turkish *evin*, "of a house," or the Votiak *murten*, "by a man." It indicates the genitive in Finnish and Lapp, in Mordvin and Samoyed, in Mongol (*-yin*, *-un*), and Mantschu (*-ni*). It is somewhat remarkable that though the Ural-Altaic family is characterized by the use of postpositions, that is, by making the defining word follow that which it defines, the modern dialects, with a few exceptions,[1] have discarded the general rule and placed the adjective before its noun. This change of position must be ascribed to a wish for differentiation, when the employment of a special postposition for the genitival relation had familiarized the speaker with the distinction between

[1] See, for instance, Wiedemann: "Grammatik der Wotjakischen Sprache" (1851), pp. 268-271.

adjective and genitive. Elsewhere the distinction was brought into relief by the help of special words or symbols to denote the genitive relation. Just as the Accadians or the Finns employed a postposition which was originally an independent word with a meaning of its own, so, too, the Semites replaced the "construct state" by the insertion of the demonstrative or relative pronoun, *'sarru sa rabi*, for example, literally "king that (is) the great ones," coming to signify simply "king of the great ones," and the Chinese assigned the same office to their *tchi*, "place." The analytic languages of modern Europe have followed in the same track, only employing prepositions like *de*, *of*, or *von*, instead of demonstrative pronouns or other words. When the conception of the genitive had once been clearly recognized, means were soon found for making it as clear in phonetic expression as it was in idea, and the ambiguous machinery of flection was superseded by a method of expression which had been familiar to the more advanced Ural-Altaic idioms from a very remote period.

The history of the genitive has shown us that the same germ may develop very differently in different families of speech. The conception of the genitival relation, when fully realized, has worn a varying aspect to Aryans and Semites, to Accadians and Kafirs. The same grammatical relation admits of being looked at from many points of view, and of being expressed in many ways. Let us now turn to another adjunct of grammar which has assumed more than one form within the same family of speech itself. A definite article is by no means a universal possession of language; on the contrary, the

majority of languages want it altogether, and wherever it makes its appearance we can trace it back to the demonstrative pronoun, with which it is still identical in German. "That man" and "the man" are in fact one and the same, the only difference between them being that the demonstrative draws emphatic attention to a particular individual, while the article acts like a classificatory suffix by narrowing the boundaries of a genus and reducing it to the condition of a species. The article has thus the same ultimate function as the adjective or the genitive, and we should therefore expect to find it following the lead of the latter and occupying the same position in the sentence. This, however, is not the case. It is true that in English and German the article precedes the noun, but it does the same in Hebrew and Arabic, as also in Old Egyptian, where the adjective follows its substantive; while, on the other hand, in Scandinavian, as in Wallach, Bulgarian, and Albanian, the place of the article is after its noun. The cause of this irregularity is the fact that the article is a very late product in any speech; it does not grow out of the demonstrative until an age which has lost all recollection of the early contrivances of language and found other means than mere position for indicating the attribute of the noun. How late this is may be judged from the absence of the definite article in dialects cognate to those which possess one. Thus in the Semitic languages there is none in either Ethiopic or Assyrian, except in the very latest period of the latter tongue; among the Aryan dialects, Russian and the other Slavonic idioms (Bulgarian excepted) have no article, the Greek article being

very inadequately represented by the relative pronoun *ije* in Old Slavonic, while Sanskrit also may be said to be without one, though the demonstrative *sa* sometimes takes its place, as in *sa purusha* like *ille vir* in Latin. Neither the Finnic nor the Turkish-Tatar languages have an article, Osmanli Turkish alone occasionally having recourse to the Persian mode of expressing it by a *kezra* (*i*) or *hemza* (') as in *nawale-y-ushk*, "the lamentations of love;" Hungarian, however, has been so far influenced by the neighbouring German dialects as to turn the demonstrative *az* or *a* into a genuine article, as in *az atya*, "the father," *a leány*, "the daughter." On the other hand, the objective case, or "casus definitus," as Böhtlingk terms it, seems formed by a demonstrative affix not only in Turkish-Tatar, but also in Mongol and even Tibetan; in Mongol, for instance, it is marked by a suffix which is commonly pronounced *-yighi*.[1] This definite case very often answers exactly to the use of a definite article with the noun, and has arisen through a similar desire to give definiteness and precision to the expression. So, too, Castrén tells us that an affix *-et* or *-t*, which he believes to be the pronoun of the third person, is sometimes attached to the Ostiak accusative, and in Hindustani, where there is no definite article, its place is taken before the accusative by a dative with the suffix *-ko*, and in Persian by the suffix *-ra*, a suffix, by the way, which Schott considers to have been borrowed from the Tatar or Mongol tongues. We may judge how attributive and defining is the nature of the objective case from the Chinese, where the same empty word *tchi*, which,

[1] Böhtlingk: "Jakutische Grammatik," p. 160.

according to Dr. Edkins, was originally *ti*, is the affix of both the objective and the possessive cases. Passing to the New World, we find the Algonkins alone among the North American Indians prefixing the article *mo* or *m'*, originally a contracted form of the demonstrative *monko*, "that," while the monosyllabic Othomis use *na* and *ya* in the same sense.

But now the question arises—granting the late growth of the definite article and its appearance only here and there in a group of allied languages—Why do some of these use it as a prefix and others as an affix? As in Greek, or Keltic, or Teutonic, the Romanic article which has been developed out of the Latin *ille* always precedes its noun, except in Wallachian, where "the master" must be rendered by *domnul*, that is, *dominus ille*. Professor Max Müller thinks that this position of the article was borrowed from Wallachian by the Bulgarians and Albanians;[1] M. Benlöw, on the contrary, holds that Albanian set the example both to Wallach and to Bulgarian.[2] Assuming that Albanian belongs to the Indo-European family of speech—a point, however, which has yet to be satisfactorily determined—we should still have an Aryan language reversing the usual order of Aryan speech. Thus ἔμερ is "name," but ἔμερι, "the name;" δέ is "earth," but δέου, "the earth;" δέρρε, "door," but δέρρα, "the door;" νιερὶ, "man," in the accusative, but νιερί-νε, "the man;" νιέρεζ, "men," but νιέρεζι-τ(ε), "the men." Whatever

[1] In Bunsen's "Philosophy of Universal History," i. p. 265.

[2] "La Grèce avant les Grecs," p. 45. According, however, to M. Dozon ("Grammaire albanaise," 1878), the postfixed Albanian article is really a termination like that of the German adjective, and not a relic of the demonstrative pronoun.

may be thought of Albanian, however, we have a clear case of the postposition of the Aryan article in the Scandinavian tongues, where the Swedish *werld-en*, for instance, signifies "the world," *luft-en*, "the air," and it is, perhaps, curious that the Scandinavians, like the Albanians, are natives of a comparatively cold and mountainous country. Mountaineers are famous for the use of their lungs, and a postfixed article is necessarily more emphatic than a prefixed one. More effort is required in laying stress on the last syllable of a word than in slurring it over and throwing the accent back.

Now M. Bergaigne has shown[1] that in the primitive Aryan sentence the qualifying word, whether adjective or genitive or adverb, came before the subject and governing word, and this agrees with what we have seen was the early conception formed by the Aryan mind of the attributive relation in contrast to that formed by the Semitic. We should therefore expect to find the article following the rule of other qualifying words, and standing before its noun in the Aryan tongues, and after its noun in the Semitic tongues. So far as the Aryan tongues are concerned, this is its general position. The German dialects which have maintained so firmly the place of the adjective and the genitive have been equally firm in maintaining the place of the definite article.[2] If Wallach influenced Bulgarian and Albanian in affixing the article, an explanation may be found in the forgetfulness shown

[1] "De la Construction Grammaticale," in the "Mémoires de la Société de Linguistique de Paris," iii. 1, 2, 3.

[2] It is possible that the position of the article in the greater number of the Romanic languages may have been influenced by Teutonic usage.

by the Romanic idioms of the early rule of Aryan speech, as evidenced by their putting the adjective after the substantive; if, as seems more probable, Wallach and Bulgarian were influenced by Albanian, we must bear in mind that the latter language may not be Aryan at all. As for Swedish and the other Scandinavian dialects, the inverted position of the article may be ascribed to what we may call the disorganization of their syntax. While Gothic observed the old rule which made the dependent and defining word precede, it is very noticeable that already in the Icelandic Snorra Edda the genitive without a preposition occurs not only before, but also after its noun. The syntactical instinct of the language was thus disturbed, and there was therefore little to prevent a new defining word like the article from occupying an anomalous place. In the Semitic languages Aramaic alone assigns a natural position to the article, which is represented by the so-called *emphatic aleph* attached to a noun when not otherwise defined by being in the construct state. Now there are many reasons which would lead us to believe that Aramaic was the first of the Semitic dialects in which the article developed itself, and that this happened shortly after its separation from the dialect which subsequently branched off into Hebrew, Phœnician, and Assyrian. The article did not make its appearance in Hebrew or Arabic until the old order of the sentence had been thrown into confusion by rhetorical inversions and the periphrastic genitive formed by the demonstrative pronoun. How it came to be prefixed to its noun is illustrated by the Assyrian. Here a kind of article makes its appearance in the Persian period,

which, when placed after its noun, has the force of the demonstrative "this" or "that." Now and then, however, we find it in conjunction with another demonstrative before the noun, a construction which can easily be explained if we regard the demonstrative and the noun as having been first in apposition, and then brought so closely together that the demonstrative became an article. In Arabic, too, the demonstrative can be prefixed to a noun which is already furnished with the article, and the pronoun and noun are thus regarded as being in apposition to one another. The same is the case in Hebrew, where we occasionally meet with a construction like *zeh hâ'âm*, "this people," literally "this the people," as well as *zeh Mosheh*, "this Moses."[1] The last example shows us that a proper name was considered definite enough to be put in apposition to the pronoun, even when without the article, and it is not difficult to assume that an usage which first grew up in the case of proper names, should in time have extended itself to all nouns which were considered definite. Even the adjective *rabbim*, "many," is found preceding its noun.[2] The preservation of the case-endings in Hebrew and Arabic may have had something to do with the position chosen by the article; it was easy enough for a demonstrative to pass into an affixed article in Aramaic, where the case-endings seem to have perished early, but it was only possible for it to do so in languages where they were preserved by its standing before the noun. Old Egyptian agrees with Hebrew and Arabic in the general rule of placing the determining

[1] Exod. xxxii. 1, Josh. ix. 12 *sq.*, Is. xxiii. 13.
[2] Jer. xvi. 16, Ps. xxxii. 10, lxxxix. 51.

word after the word it determines; it also agrees with them in prefixing the article. But this, again, may be explained by the use of the demonstrative as an article having originated in its apposition to the substantive; while the use of *ua*, "one," as an indefinite article probably assisted in the process. Of course, when a definite article had once come into existence, a difference of position served to distinguish it from the demonstrative pronouns to which it had formerly belonged.

This long inquiry into the causes which have made the article sometimes an affix and sometimes a prefix has introduced us to the last department of the morphology of speech—that which is known as syntax, or the arrangement of words in a sentence. Professor Earle has remarked that syntax varies inversely as accidence; wherever we have an elaborate formal grammar, there we have a corresponding poverty of syntax; wherever we have little formal grammar, as in Chinese or English, there syntax comes prominently into view. This is only another way of stating the fact that in default of such contrivances as inflections, language has recourse to rules of position in order to denote the grammatical relations of words; and though Greek shows us that a highly developed accidence may exist along with an equally developed syntax, yet it is quite true that a language which makes such large use of composition as Sanskrit, must be very poor in the matter of syntax. Composition and syntax are antagonistic to each other. The study of comparative accidence, or, as it is rather loosely called, comparative grammar, is much in advance of that of comparative syntax; indeed, it is but lately that comparative syntax

has attracted the attention of philologists to any extent, Jolly, Delbrück, Bergaigne, and others being among the pioneers of this branch of linguistic science. Here, too, we must work back to that inner form which underlies the choice of the position of words in a sentence; we must find out by the comparative method what were the primary syntactical rules observed by a group of cognate tongues, what were the grammatical conceptions they indicated, and how they were modified by the several languages in the course of their subsequent history. The germs of syntax are capable of infinitely various development, although each family of speech starts with its own special point of view, its own particular principle. The Aryan began by placing the defining word before the word defined; the Semite by placing it after; just as in Burman the defining word precedes, while in Siamese or Tai it follows. Languages, which have never attained to the idea of a verb, like the Polynesian, must necessarily differ materially from those in which the verbal conjugation plays a principal part; while in the polysynthetic languages of America, syntax in the proper sense of the term can hardly be said to exist at all. Unlike formal grammar, however, syntax is comparatively changeable; Coptic has become a prefix language, whereas its parent, Old Egyptian, was an affix one, and the growth of rhetoric as well as the development of grammatical forms tend to obliterate the old landmarks and principles of syntactical arrangement.

The history of the accusative with the infinitive in Latin is a good example of this. Prof. Max Müller

describes his utter amazement when he was first taught to say, *Miror te ad me nihil scribere*, "I am surprised that you write nothing to me,"[1] and there was plenty of reason for it. He has clearly shown that most of the Greek and Latin infinitives were originally dative cases of abstract nouns, and not locatives, as has often been maintained; the Greek δοῦναι or δοϝέναι, for instance, answering to the Vedic *dâváne*, "to give," τετυπέναι to *vibhráne*, "to conquer" or "effect," *amare*, *monere*, *audire*, to *jîv-ásc*, "to live." The Greek middle infinitive in -σθαι is a relic of the Vedic dative of an abstract infinitive from the root *dhâ*, "to do" or "place," ψευδέσ-θαι, "to do lying," exactly answering to the Vedic *vayodhai* (for *váyas-dhai*), "to do living," or "to live," on the model of which analogy has created the false forms τύψεσθαι, τύψασθαι and τυφθήσεσθαι. The true character of the Latin infinitive may be discovered from the verb *fieri*, which goes back to an earlier *fiesei*, the dative of a stem in *-s*. Bearing in mind, then, what the infinitive originally was, we have little difficulty in understanding how it came to be used with an accusative, which was really the object after the principal verb. The sentence quoted above simply meant at first: "I am surprised at you for the writing of nothing to me," just as *te volo vivere* was "I choose you for living," or *tempus est videndi lunæ*, "it is the time of the moon, of seeing (it);" and the extension of the use of the accusative with the infinitive to sentences in which we can no longer trace any reflection of its original force, is only another example of the power of analogy in spread-

[1] "Chips," iv. p. 39.

ing a particular habit, the proper sense and meaning of which have been forgotten.

Let us remember, however, that at the time when an Aryan syntax was first forming itself, there was as yet no distinction between noun and verb. The accusative and genitive relations of after days did not yet exist; they were still merged together in a common attributive or defining relation, and the growth of the verb was necessary before a genitive could be set apart to define the substantive, and an accusative or object to define the verb. Reminiscences of this primitive state of things have survived into the later forms of speech. When Plautus says, "Quid tibi hanc tactio est," he is using *tactio* as he would *tango*, and while in the Rig-Veda nouns in *-tar* govern an accusative like transitive verbs, we actually find a verb undergoing comparison in *bhavati-tarâm*, "he is more so." In fact, genitive and accusative alike are what Mr. Sweet calls "attribute-words," the one being the attribute of the noun, the other of the verb, and before there was any distinction between verb and noun there could be no distinction between them also. The modern Englishman may well ask whether there is any difference between "the performing this," and "the performing of this;" or between "doing a thing," and "doing badly." The Latin supines and gerunds, which are petrified cases of nouns, are followed by what are termed "the cases of their verbs," and the so-called indeclinable participles of Sanskrit, which are really instrumentals of nouns in *-tu*, equally take the accusative after them. In Greek εὐτυχῶς ἔχειν has the same meaning as εὐτυχίαν ἔχειν, and the Greek and San-

skrit use of an accusative with the verb "to be," shows us how artificial are our distinctions between transitive and intransitive verbs. The adverbial sense of the accusative comes out plainly in the Homeric ἀκὴν ἧσαν, and is one more proof of the fact that the accusative, like the genitive, must be classed along with the adjective and the adverb as a qualifying word that defines and limits the words to which it is attached. Custom and grammatical development have alone determined how such qualifying words should be severally used.

The languages of our family of speech are in fair agreement as to the employment of the accusative and the genitive; there are other syntactical contrivances, however, where such an agreement is not to be found. The "ablative absolute" of Latin, for instance, is replaced by a genitive absolute in Greek, by a dative in Lithuanian, by a locative, sometimes also a genitive, and very rarely an ablative, in Sanskrit. In old English we have apparently a dative (as in Anglo-Saxon), as when Wycliffe writes, "they have stolen him, us sleping," whereas, as Mr. Peile observes,[1] we should now say, "we sleeping," using the nominative as occasionally in Greek. As a matter of fact, this so-called "casus absolutus," this case "freed" from all government, and standing outside the sentence to the perpetual astonishment of the grammarians, is really a qualificatory word, dependent like the adverb upon the verb, and denoting the circumstances, or instrument, or mode of an action. Instead of the construction used by Wycliffe, we might just as well have had, "they have stolen him during our sleep."

[1] "Primer of Philogy" (1877), p. 112.

Perhaps the first thing that strikes us when we first learn the classical languages, and more especially Latin, is the freedom with which words are dropped *pêle-mêle*, as it were, into a sentence. This power of transposing words stands in marked contrast with the comparatively fixed order of words in a modern European language. When Tennyson says, "Thee nor carketh care nor slander," we feel that he has gone to the extreme length of what is possible even in poetry, and the arrangement of a German sentence, in spite of its inflections, is determined by somewhat severe rules. We must remember, however, that the apparent freedom of the classical languages is due in great measure to the artificial style of literary men who took advantage of the inflectional character of the dialects they spoke to invert the position of words for rhetorical purposes, and that such inversions were not usual in the language of every-day life. We cannot judge a language properly from the works of its literary men, and this is particularly the case with Latin, where the language of literature was divided by a great gulf from the language of the streets. But even in Latin we find the verb gravitating towards the end of the sentence; this is its predominant position, for instance, throughout the second book of the "Gallic War" of Cæsar, who represents the spoken language of his time much more closely than most of the other authors of Rome. Now, M. Bergaigne, in the very able series of articles already referred to,[1] has lately tried to show that this was not always the position of the Aryan verb. He

[1] "De la Construction Grammaticale," in the "Mémoires de la Société de Linguistique," iii. 1, 2, 3.

begins by distinguishing between *phænomena*, or qualities and acts, and *objects* which are recognized either as bearing these qualities, or as the ends and instruments of the acts. His phænomena, therefore, will answer to our qualificatory words, and a sentence in which they occupy the principal place will be a predicative one, just as sentences in which an object is brought into prominence will be "sentences of dependence." The substantive verb is but a late creation; even in Latin a sentence like "majorum benefacta perlecta" is perfectly intelligible though "sunt" is omitted; and such a phrase as *Deus est sanctus* meant at first "God exists as a holy being," the adjective being a predicative attribute or "phænomenon" in apposition to *Deus*. It was only by degrees that the sense of "existence" disappeared from the verb, and it became a simple copula. More than once we have referred to the primary rule of Aryan syntax, according to which the qualifying word is placed before the word qualified; this is a rule which is borne witness to by almost every compound, by the verb which affixes the personal pronouns to its stem; nay, even by our own English, which still makes the adjective precede its noun. Where the rule seems to be violated, an explanation is generally forthcoming. Latin and Greek compounds like *versipellis* or φιλάδελφος, really signify "who has the skin changed," "one who has a brother beloved," the first part of the German *tauge-nichts*, our *dare-devil*, is an imperative, and the second element in the Sanskrit *dṛishṭa-pûrvva*, "seen before," is a pronoun. Whether Bergaigne is right in following Grimm's explanation of compounds like φερέ-*F*οικος, πνωσί-νοσος, as containing imperatives, is an open question, though in the Rig-Veda

the imperative and conjunctive are certainly inverted and set before their case; it is more probable that we are here dealing with instances of false analogy, δαμάσιππος, "she who tames horses," having been made equivalent to ἱππόδαμος, "horse-tamer," and so made the model of a new formation. As for the *hippopotamus*, or "river-horse," the animal came from Egypt, and so, too, did the manner of compounding its name. Proper names like Ἀγαθὸς δαίμων, or *Neapolis*, are scarcely in point; in them, moreover, the attribute and subject are in apposition. The curious use of the article in Greek with two nouns, one of which is a genitive, is based upon a different reason. When the article had once established itself in speech, ὁ τοῦ χοροῦ διδάσκαλος exactly answered to ὁ χορο-διδάσκαλος, "the choir-master," and the second noun being drawn back to the place of its article, we get ὁ διδάσκαλος τοῦ χοροῦ and ὁ διδάσκαλος ὁ τοῦ χοροῦ, an order which is observed in modern Albanian. Turning to Latin, we find that the adjective when placed after the substantive implies a sentence of predication, *res militaris* being "a thing which is military," *navis longa*, "a ship which is long." It is only proper names compounded with *Forum* and *Portus*, like *Forum Julii*, which reverse the order of words as we have it in *juris-consultor*, and in these proper names the stress is on the second part of the compound. The altered position of the adjective in the Romance languages is probably due to the influence of the periphrastic genitive with the preposition *de*; at all events the older constructions place the adjective before its noun.

The rule followed by genitives and adjectives must have been followed by verbs, which are merely attributes of their subjects, and the formation of the verb by affix-

ing the personal pronouns to the attribute or verbal stem confirms this conclusion. In the primitive sentence the object would have come first, then the attribute or verb, and lastly the subject; and the Latin *credo*, which has the same origin as the Sanskrit *'srad-dadhâmi*, "heart-placing-I," is a good illustration of it. But a want came to be felt of distinguishing between the attribute as a mere qualificative and the attribute as a predicate, and so while the old order remained the type of a qualificative sentence, it was reversed in predicative sentences; the subject was put at the beginning and the verb at the end. This process was assisted by the division of the sentence into two halves, one-half consisting of the subject with its dependent words, and the other half of the verb and object; and if we suppose that each half was represented by a single compound, we can easily see how ready to hand the process would have been. Indeed, the verb seems to fix itself at the end of the sentence almost naturally, since the deaf-mute when taught to communicate with others, invariably sets the verb in this position, the subject and object to which his thought is chiefly directed being the first to occur to his mind. It is this position of the verbal attribute which has established itself in Sanskrit, Greek, Latin, Gothic, and Anglo-Saxon; which still is the rule in German in dependent sentences, and has only been changed in English and the Scandinavian and Romanic dialects through the analogy of the substantive verb and the extended use of prepositions. A preparation for the new arrangement of the sentence, however, which places the object last, was already made by the infinitive. On the one hand, the infinitive could govern a case, and so was correctly preceded by the

governed word; on the other hand, it was itself a case dependent on the principal verb. But its nominal character was more and more obliterated by its employment with verbs like *posse* or *velle*, *can* or *will*; "he has the ability for doing," gradually came to be "he can do." Hence in Homer, as in Old Latin and Old German, the infinitive is mostly found at the end of the sentence, originally, it is true, accompanied by its cases, but afterwards standing alone to qualify the verb, and separated by the latter from the cases with which it was construed. But with all this confusion of the old order, such cases as the ablative or instrumental still maintained their proper position before the word they qualified, and when crystallized into adverbs continued to stand preferably immediately before the verb. Many of these adverbs afterwards became prepositions, the government of the noun passing from the verb to the adverb that accompanied it; other prepositions, like the Latin *gratiâ* or the Greek *χάριν*, originated in substantives construed with genitives; and hence the preposition was first of all a postposition, following and not preceding its case. Even now *nach* stands after its case in German, and we speak of *thereon* and *thereof*, *homeward* and *leeward*, to say nothing of *God-wards* and *you-wards*, or of what is told us of Chaucer's Shipman,[1] that "fful manye a drauȝt of wyne hadde he i-drawe ffrom Burdeaux ward," while the Latin *mecum*, *nobiscum*, and the like, survived to the last days of the language. So, too, in Anglo-Saxon the preposition sometimes runs counter to its name by coming after its case, as *hî wyrcaþ þone cyle hine on*, "they produce cold him on,"[2] but this construction is

[1] Prologue, 396. [2] Orosius, i. 1, 23.

fully explained when we find the preposition occupying the same place in an adverbial sense, as in the Saxon Chronicle (1016): *se here him fleâh beforan*, "the army him fled before."

So long as sentences remained simple and unconnected, there was but little reason for serious changes to occur in the order of their words. But it was quite different when an attempt began to be made to connect them together, to compose sentences that were dependent or subordinate. When a sentence became an object or attribute of another, the arrangement that had hitherto held good was necessarily thrown into confusion. Not only might an idea be an attribute of an attribute, but that again might be the attribute of another attribute. This intimate connection and fusion of sentences seems peculiarly suited to the genius of Aryan speech; where a whole sentence could be expressed by a single long compound, it was easy enough to make it dependent on something else. The Semitic tongues, which held composition in abhorrence, were equally averse to an intimate connection of sentences; neither process was very compatible with the habit of thought which placed the qualifying word second instead of first, and we are left to gather the relation of a subordinate sentence to a principal one merely from their juxtaposition, or the monotonous repetition of the simple conjunction "and." Indeed, the Semitic languages have not risen far above the condition of the deaf-mute or the Polynesian, who have no dependent sentences, each sentence standing complete and entire by itself.[1] If the Dayak wishes to express

[1] Gaussin: "Du dialecte de Tahiti" (1853).





even so simple a notion as "I thought that he was rich," he is obliged to say, *ingârâ-ku iâ tatan*, "my thought; he rich." What a contrast to the Greek language with its manifold particles, its subtle analysis of thought, its delicate expression of every shade of connection between ideas! Such, however, had not always been the condition even of the Greek language, or at all events of the language from which it had sprung. If, for instance, we examine the history of the relative sentence, we shall find it growing by slow degrees out of simple subordination. First of all it was merely set side by side with the principal clause, as in Hebrew and Assyrian poetry, or such English phrases as "This is the man I saw." Next, the object of the antecedent clause was represented in the consequent by a demonstrative pronoun for the sake of clearness and emphasis; and so we may say: "This is the man, that (man) I saw." Then in time the demonstrative came to be used in all cases alike, and not only where peculiar stress had to be laid; it ceased to be any longer a pure demonstrative, and became a relative applied by analogy to instances in which the demonstrative could hardly have been employed.[1]

We have now passed in review all that is included under the morphology of speech. The morphology of speech is the reverse side of its physiology, dealing with the spirit and inner life of the sentence just as the physiology of speech deals with the outward frame. If words are posterior to the sentence, if they are in fact

[1] See Jolly: "Ueber die einfachste Form der Hypotaxis im Indogermanischen," and Windisch: "Untersuchungen über den Ursprung des Relativpronomens," in Curtius's "Studien," vi. 1 and ii. 2.

but so many crystallized and abbreviated sentences, that part of the science of language which treats of their meanings ought strictly to follow a chapter on morphology. That which is most scientific, however, is not always the most practically convenient, and such is the case with our present subject. But we must not forget that the signification of a word is really determined by its relation to the other words with which it is combined, and if this does not seem to be the case with the isolated words we find in the dictionary, it is only because these isolated words are petrified sentences whose meaning has long ago been established, partly by reference to other sentences, partly by a determination of the relations between the parts of which they are composed. The mutual relations of the elements of a sentence, as well as of fully formed sentences, constitute grammar in its widest sense; they constitute also the morphology of language. A fact of grammar is a compound of two things—the conception of a relation between one idea and another, and the embodiment of this conception in phonetic utterance. Both parts of the compound are continually developing, and becoming at once simpler and clearer, and the duty of the linguistic morphologist is to trace the history of this development, and follow it back to its earliest source. We have to discover the different mental points of view from which the structure of the sentence was regarded by the different races of mankind, to investigate and compare the various contrivances and processes through which these points of view eventually found their fullest expression, to classify the modes of denoting the relations of grammar at the disposal

of language, to examine the nature of composition and of stems in the groups of speech of which they are characteristic, to analyze the conceptions of grammar and determine the elements and germs out of which they have sprung, and finally, to ascertain the true origin and meaning of the so-called rules of syntax, and keep record of the changes that take place in the arrangement of words. The mind of man has indeed been cast everywhere in the same mould, but the scenes amid which its infancy was cradled, the conditions under which it grew up, have differed materially and produced a corresponding difference in the expression of its thoughts in language. Two rivers may start from the same spring, but one may flow, clear and limpid through granite mountain ranges and silent forests into a tropical sea—the other may run a turbid and discoloured course through low marsh-lands, by steaming mills and crowded wharves into a northern ocean. It is only when we have thoroughly explored the morphology of each group of kindred tongues, have seen how their inner form has gradually expanded like the flower out of the seed, that we can venture to bring our results together, to compare the morphology of one group of languages with that of another, and learn wherein they differ and wherein they agree.

END OF VOL. I.



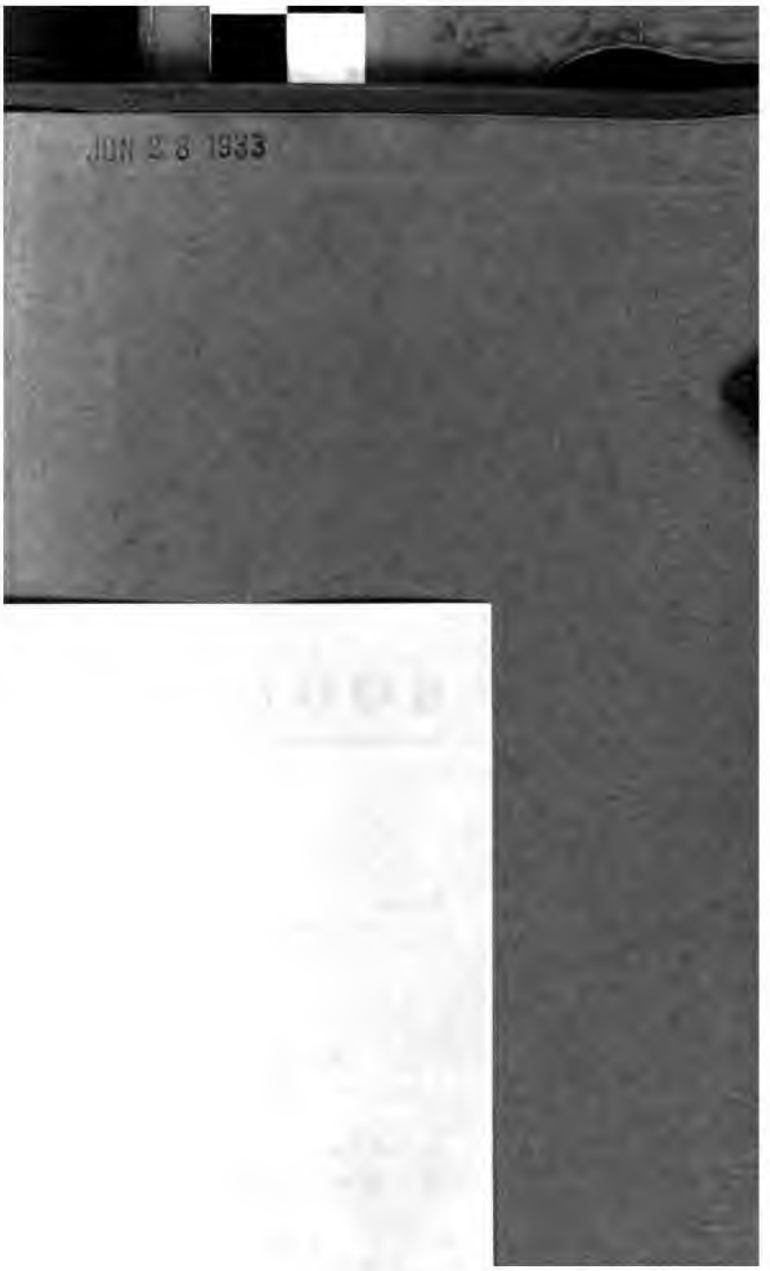











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